

## **How a digital twin can help in the case of FPSO new builds.**

The difference of a new built to a conversion is that the hull is free of corrosion and fatigue at the beginning. On the other hand, many other aspects are equal such as coating degradation, anode degradation, etc.

### **The digital twin can provide the following operational benefits when implemented in new builds:**

- Automation of inspection. The digital twin allows automation of inspection planning and reports. It also helps to avoid inspection inconsistencies.
- As built and as is. The digital twin allows to continuously update the model with inspection and repair data as well as detects differences between the design models and actual built structure.
- Coating and anodes management that are important to keep the structure protected in ballast tanks.
- Anomalies management. Since anomalies may occur even due to design issues, they many happen in new builds and must be properly controlled.
- Emergency response. It is important to have the actual hull condition in hand with a digital twin in the case of an emergency such as flooding due to wrong valve maneuvers or collisions.
- Knowledge management. Having all the information related to the FPSO in the same place and tagged to the regions reduces time to find documents such as original drawings, inspection, and repair reports, etc.
- Life extension. A digital twin makes the life extension much easier.

### **Strategic benefits that can also be observed in new builds:**

- Digital twins in general can mitigate the talent and experience gap given its ability to provide prescriptive actions to the maintenance of the asset.
- Digital twin technology can assist operators with establishing safer operations by embracing recommendations taken from insights learnt from past behavior across the fleet.
- Digital twins give operators more confidence in human-based operations as it can potentially reduce human errors from occurring.
- Digital twins lead to a better level of safety, transparency, and confidence, whilst also helping to diagnose and predict structural performance, which can prolong the life expectancy of an asset.
- Accurate insights on the health of the asset, specifically its structural systems, improves operational expenditures which can positively influence capital allocation at the business level.
- If used as an integral part of the decision-making process, digital twin technology improves FPSO's operator's competitive advantage compared to traditional ways of working. It can provide revenue protection, increased operational efficiency and better customer experience as the technology gives the operator's client increased confidence and transparency on the asset's ability to stay productive.
- Digital twins can contribute to reduce POB in FPSOs by allowing sensors to bring information that otherwise should be taken by human inspections.
- The digital twin is the bridge for the digital transformation of the inspection, maintenance and repair processes.