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CASE STUDY

A New Lease on Well Life:

Optimising Conductors Across a UAE Well Portfolio



Location

Offshore UAE

Client

UAE Operator

Product

Conductor Analysis

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Project Overview

A UAE operator needed to understand whether **more than 60 existing offshore production and injector wells could continue operating efficiently** as their conductors aged. At the same time, the operator wanted to **avoid over-designing the conductors** for a planned new-well campaign.

Aquaterra Energy used **a focused, multi-well conductor analysis** to establish **minimum wall thickness requirements** for the existing wells and **optimise conductor size, grade, thickness and setting depth** for the new wells. The study supported **targeted intervention planning, extended the productive life of existing assets and identified substantial steel and carbon savings** across the drilling campaign.





Challenge

Many of the operator's offshore production and injector wells were more than 40 years old. Corrosion of the conductor pipe and deterioration of the cement inside the casing could **reduce structural integrity,** so the operator needed **clear minimum wall thickness limits** to **guide routine inspections and prioritise any intervention work.**

Designing out unnecessary steel from the start

For a series of planned wells, the operator also wanted to optimise conductor length and size. Reducing unnecessary steel and conductor setting depth could lower material use, project cost and associated carbon emissions, while still meeting structural and industry standard requirements.

The study therefore needed to:

- Establish **minimum conductor wall thickness requirements** for the existing wells,
- Account for **different corrosion levels and cement deterioration**,
- **Support inspection and intervention planning** across a large well portfolio,
- **Optimise conductor diameter, grade, wall thickness and setting depth** for new wells,
- Reduce unnecessary steel, cost and carbon **without compromising** the system's structural integrity.

Solution

Aquaterra Energy delivered a **multi-well analysis designed to give the operator reliable answers at a minimal cost per well.** The wells were grouped into six categories by well type, and the highest-risk well in each group was selected based on environmental conditions, jacket structure and age. Focusing **detailed analysis on these representative wells reduced both cost and lead time** while maintaining confidence in the results representability.

Clear limits for inspection and intervention planning

For each well group, the analysis considered **a range of corrosion levels and three levels of cement deterioration.** Aquaterra Energy then provided **minimum required wall thickness recommendations** for different amounts of remaining cement. These limits could be used during routine inspections to determine whether a well could remain in operation or whether repair work should be scheduled.





Using less steel without limiting performance

For the planned wells, we assessed a range of conductor sizes to determine **the minimum diameter, material grade and wall thickness** required to withstand axial and bending loads. Soil analysis was also used to calculate the **minimum setting depth** needed to provide sufficient support. This gave the operator a clear basis for ordering the correct conductor size and number of joints, **without over-designing the system or wasting resources.**

Results

The study gave the operator **confidence to keep many existing wells in production for longer** and delay carbon-intensive decommissioning. The wall thickness limits also provided **a practical framework for routine inspection and risk-based repair scheduling.**

Small design changes, significant campaign savings

The structural analysis showed that a 30 x 0.875 inch Grade B conductor could be used instead of the proposed 30.5 x 1.125 inch 52 ksi conductor, **saving an average of 8 tonnes of steel and 50 tonnes of carbon** per well. The soil analysis also showed that the conductor setting depth could be reduced by an average of 218 ft, **saving a further 35 tonnes of steel and 219 tonnes of carbon** per well.

Across the planned multi-well drilling campaign, these design changes equated to **more than 800 tonnes of carbon savings.**

Key results included:

- Minimum conductor **wall thickness limits for more than 60** existing wells
- A **practical basis** for routine inspection and intervention scheduling
- **Extended production life** for existing offshore assets
- An **average steel saving of 43 tonnes per new well** across conductor size and setting depth
- More than **800 tonnes of carbon savings** across the planned drilling campaign





Offshore analysis, intelligently engineered

Make confident decisions across ageing assets and new well designs. **Discover how Aquaterra Energy's conductor analysis can extend well life, reduce unnecessary material use and support lower-carbon offshore operations.**