

Performance Report: Vår Energi (Operator) Ringhorne Offshore Rig, Norway

Increased Electrical Stability and Viscosity with Dual Shear Gun

Introduction

The results from the use of the Dual Shear Gun at Vår Energi's oilfield Ringhorne is summarised, with a particular focus on improvements in stability, low shear viscosity, and electrical stability (ES). Data has been collected across seven different campaigns, with results demonstrating clear and consistent improvements in all key areas.

Background

In the oil industry, stability and control over viscosity are crucial for optimal operations, safety, and efficiency. Traditional blending methods have often produced variable results, especially under challenging conditions on the Norwegian Continental Shelf. The Dual Shear Gun was therefore tested to evaluate its potential for process improvements. In 2022 we had the inhouse test at MI SWACO with good results processing 3 times faster than conventional shearing method, improved ES by 68,2%.

Implementation in a Commercial Project

The Dual Shear Gun has been utilized in seven campaigns involving Vår Energi at Ringhorne. The rig runs MPD and had no sufficient shearing method on the rig or had the ability to shear efficient over drill bit. The rig had major sagging problems. During these campaigns, data on shear viscosity and electrical stability was collected before and after the implementation of the Dual Shear Gun.

| Jagtech Scope of Supply | Quantity |
|--------------------------------------|--------------------------|
| Dual Shear Gun | 1 |
| High Pressure Triplex Pump | 1 |
| Filter/Strainer unit | 1 |
| PRV | 1 |
| Hoses/Chicsan and connections | Multiple lengths |
| Personell for Rigging and Operations | 1-2 (Day and Nightshift) |

Results

Electrical Stability (ES)

Electrical stability is an important indicator of emulsion robustness. After the introduction of the Dual Shear Gun, we saw a general increase in ES values of over 40% across all seven campaigns and this substantial improvement indicates that the emulsions can withstand greater stress without separating

Stability Over Time

The most notable finding is that the improvements in reduced sagging and fluid stability over time have been consistent throughout all campaigns. This suggests that the effect of the Dual Shear Gun is not random but represents a real and lasting process improvement.

Discussion

Improved stability and control over viscosity provide several benefits in the operations with more drilling per meter and reduced NPT. The Dual Shear Gun has proven to be an effective tool for meeting operational challenges, especially under demanding conditions on the Norwegian Continental Shelf.

Conclusion

Based on results from seven campaigns at Vår Energi and Ringhorne, we can conclude that the Dual Shear Gun delivers increased stability, lower shear viscosity, and higher electrical stability — with ES values increased with more than 40%. These improvements are consistent and provide clear advantages for ongoing operations and production.

Recommendation

- Further use of the Dual Shear Gun should be considered as standard practice for new campaigns and expansions.
- Additional data collection and analysis are recommended to document long-term effects and further optimize usage.
- Evaluate fixed installation of Dual Shear Gun.

Attachments and Documentation

See technical information about barite sag.