

Case Study

Production Optimisation



BACKGROUND

Core used its extensive global experience in brownfield and mature assets to enhance uptime, meet regulatory requirements and improve production rates by providing control system changes to mitigate against the effect of issues with slugging, compressor performance, gas lift, water injection and produced water quality.

THE CHALLENGE

Core has had an association with the particular field since providing start up and initial production stability expertise from the first production well onto the FPSO. As the production profile has changed Core has revisited the facility on a number of occasions to provide further optimisation services and controls improvements.

After some years of reliable operation of the produced water disposal system, an increase in process disturbance incidents and subsequent trips were being experienced. Produced water rates had been increasing to the point where they were exceeding the produced water injection system..

Core Energies Limited

Spaces, 1 Marischal Square
Broad Street, Aberdeen
AB10 1BL, United Kingdom

+44 (0)1224 602955
enquiries@core-energies.com
core-energies.com



CORE'S SOLUTION

Core addressed and implemented a number of control system improvements;

- A non-linear level control algorithm and logic changes were made and 3rd party separators to mitigate the impact of slugging on production rates. The requirement for manual intervention by control room operators on start-up has been removed thus removing this burden. An HP hydrocyclone capacity control scheme was implemented to manage large water slugs.
- Improvements to crude oil cooler performance were made by implementing a temperature control feedforward scheme.
- Investigations into parallel compression train problems with constant recycling of gas revealed conservative control lines which were limiting compressor performance and throughput.

Further work saw Core reviewing (onshore and offshore), developing and implementing a number of control and optimisation modifications activities to resolve operational issues which included;

- Export Compressor trains performance assessment
- Improved slug handling (to mitigate new severe slugging productions wells)
- Degasser level control and skimming sequence
- Temperature control loop feed forward control for;
 - Fuel Gas Superheater
 - Gas Export Cooler
 - Crude Oil Cooler
 - VOC Recovery Header Pressure Control

PRODUCED WATER RATES

Core, from onshore and offshore investigation, proposed a revised control philosophy to enable the produced water degasser to dispose of produced water via two routes simultaneously (re-injected and overboard routes) with the preferential route to the injection wells.