OPEX

Digitally Enabling Oil & Gas Operations

Delivering Significant Reductions in CO$_2$ Emissions

OPEX helped a customer to reduce CO$_2$ emissions on a UKCS asset. Here's how we did it.

The Challenge

Our customer had deployed X-PAS™ services across a number of systems on their asset with a focus on improving system reliability and reducing system shutdowns.

As part of the core service, and by undertaking a more in-depth analysis of the same data sources, there are often system performance improvement opportunities to be realised in the form of energy efficiency and carbon emissions.

Despite making a significant improvement in reducing system shutdowns, our customer was experiencing ongoing operational problems on gas compression with fouling of the suction cooler which had an adverse effect on the compressor dry gas seal flow. This fouling had required a number of opportunity-based system shutdowns to rectify the problem.

Our Approach

Modelling and analysing operational data revealed a number of areas where performance improvement could be realised:

- Assessment of the flow regime across the compression train to determine optimum operating points and power requirements

- Identification of intrinsic resistance within vessels (leading to seal gas starvation) to assess potential to reduce differential pressure (dp) in suction cooler (PCHE)

- Identification of parameters to optimise dry gas seal flow

Outcomes

- The polytropic efficiency and optimum operating envelope of the compressors was clearly established

- The intrinsic resistance and high dp of the suction cooler was reduced through balanced changes of the flow regime

- Stable dry gas seal supply was established

- Gas turbine power requirements were optimised with resultant reduction in CO2 emissions and fuel gas savings

- The reduction in suction cooler dp has extended the time interval of exchanger cleaning

The Impact

2MW

Reduction in gas turbine load

13%

Improvement in polytropic efficiency

>3,000

Tonnes of CO_2 emissions saved per year

>£100,000

Additional gas export revenue

>£60,000

EU ETS savings per year

OPEX