$nanO_2$® Nabors Colombia Case Study

Objective

Reduce the emissions impact from drilling operations on multiple rigs in Colombia by decreasing fuel use from rig power generation.

Solution and Testing Procedure

The $nanO_2$ fuel enhancer was deployed on five drilling rigs in Colombia to validate its effectiveness.

The accurate ratio of $nanO_2$ was added to the fuel each time the rig received a delivery using the manual dosing procedure. The manual dosing procedure was implemented as a fast, low-cost solution.

To establish a baseline for each well, data was collected for the five rigs at varying drilling phases. Daily fuel usage was recorded from the tank level readings. The fuel consumed per day for each well section was used as the key performance indicator (KPI) for this study due to the large sample size of data collected. The time period using $nanO_2$ was also broken down by well section. To compare each day's fuel use, a relevant baseline section was calculated from two or more wells.

Results

Testing of the five rigs resulted in a 5.3% increase (weighted by fuel use) in fuel efficiency over the baseline, saving 24,486 gallons of diesel over 25 wells.

The 24,486-gallon fuel savings equates to an estimated reduction of 250 metric tons of CO_2e*. This does not take into consideration the additional reduction in emissions resulting from $nanO_2$ that have been observed.

Rig	Overall Savings
Rig 1	4.4%
Rig 2	3.6%
Rig 3	3.5%
Rig 4	7.8%
Rig 5	6.9%

Conclusion

The $nanO_2$ fuel enhancer was effective in reducing emissions of Colombia's operations and increasing its fuel efficiencies. The rigs successfully implemented the manual dosing procedure into daily operations to ensure continued savings and safe operations.

*Source: *Based on 2021 EPA GHG emission Factors. CO_2e (equivalent) is calculated by including the GWP of CH_4 and N_20 of diesel to standard CO_2 Diesel Fuel Emissions*

Case Study Details

Location: Colombia

Timeframe: February 2022 - August 2022

Scope: 5 Rig Deployment

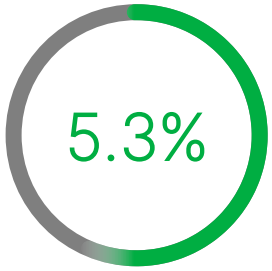
Test KPI: Fuel Used Per Well Section

Rig Spec: Land Rig

Power Generation: CAT 3512

Results Overview

(Across 5 Rigs)



Average Increase in Fuel Efficiency

Total Metric Ton's of CO_2e* Saved