

# nanO<sub>2</sub><sup>®</sup> Nabors East Texas Case Study



## Objective

Reduce the emissions impact of the drilling rig operations, by improving the fuel efficiency of the power generation systems in East Texas.

## Solution and Testing Procedure

The nanO<sub>2</sub> fuel enhancer was deployed on a drilling rig in East Texas to validate its effectiveness.

The accurate ratio of nanO<sub>2</sub> 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.

Using kilowatt per gallon (kWh/gal) as the standard key performance indicator (KPI) to evaluate the rig's efficiency, fuel usage and engine load were monitored. Fuel usage was recorded daily from tank level readings, which was crosschecked with indicated fuel delivery. Engine power data and number of online generators were captured by rig controls, then the data was analyzed and displayed to monitor fuel usage and engine performance.

## Results

Testing resulted in a 5% increase in fuel efficiency over the baseline, saving 5,428 gallons of diesel over the 73 days that used nanO<sub>2</sub>. Differences in avg kW and gens-online (efficiency changes that would be attributable to changes in engine management) were accounted for when comparing the two datasets.

The 5,428 -gallon fuel savings equates to an estimated reduction of 55.6 metric tons of CO<sub>2</sub>e\*. This does not take into consideration the additional reduction in emissions resulting from nanO<sub>2</sub> that have been observed.

## Conclusion

The nanO<sub>2</sub> fuel enhancer was effective in reducing emissions of the East Texas operations and increasing its fuel efficiencies. The rig successfully implemented the manual dosing procedure into daily operations to ensure continued savings and safe operations.

*Sources: \*Based on 2021 EPA GHG emission Factors. CO<sub>2</sub>e (equivalent) is calculated by including the GWP of CH<sub>4</sub> and N<sub>2</sub>O of diesel to standard CO<sub>2</sub> Diesel Fuel Emissions*



## Case Study Details

Location: East Texas

Timeframe:

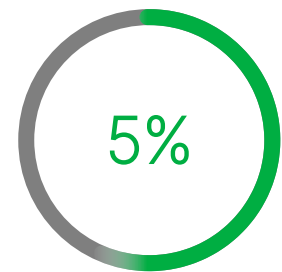
- Baseline: 07/01/22-09/28/22
- nanO<sub>2</sub>: 09/29/22-12/15/22

Test KPI: kWh/gal

Rig Spec: Land Rig

Power Generation (4): CAT 3512

## Results Overview



**Increase in Fuel Efficiency**



**Metric Ton's OF CO<sub>2</sub>e\* SAVED**