

# Transforming Drilling Operations with Hydrogen Injection Technology Resulting in up to 7% Reduction in Greenhouse Gas (GHG) Emissions

## OVERVIEW

The oil and gas industry faces growing pressure to cut emissions due to environmental concerns and regulatory requirements. Emissions such as CO<sub>2</sub>, NO<sub>x</sub>, and CO contribute significantly to climate change and air quality issues. This challenge necessitates finding effective solutions to mitigate emissions while maintaining operational efficiency. In response to these challenges, Precision undertook a groundbreaking pilot project aimed at reducing the environmental impact of our power generation units. The project involved the integration of hydrogen injection technology, which allowed for the reduction in fuel consumption in engines with minimal modifications.

## SOLUTION: HYDROGEN INJECTION SYSTEMS

By injecting carefully measured quantities of hydrogen and oxygen into the engine's air intake, derived from electrolysis of distilled water, the system optimizes the fuel-air mixture for improved combustion efficiency, power output, and reduced emissions of CO<sub>2</sub>, NO<sub>x</sub>, and CO.

One of the key advantages of this technology is its seamless integration into our existing rig infrastructure. This allows us to adopt the system without major modifications, ensuring operational continuity and efficiency. Real-time monitoring capabilities provide valuable insights into fuel consumption, emissions levels, and engine performance, enabling us to fine-tune settings for maximum efficiency and environmental impact. The hydrogen injection system's non-pressurized design prioritizes safety while mitigating risks associated with gas storage.

## RESULTS AND BENEFITS

The pilot project yielded significant positive results, demonstrating the potential of hydrogen injection technology in reducing environmental impact. Key outcomes included:

**Diesel Savings:** The use of hydrogen injection led to notable reductions in diesel consumption across power generation units.

**GHG Reduction:** Achieving up to a 7% reduction in GHG emissions.

**Variable Load Performance:** The technology showcased effectiveness across varying engine loads.

