

PERFORMANCE STUDIES

Field Reports from Windrock

AUTOBALANCE™ SYSTEMS
REPORT# 200

AutoBalance™ System Boosts Engine Performance in EOR Application

SCENARIO

A major oil and gas producer was ramping up enhanced oil recovery (EOR) in the Permian Basin region of West Texas. The operation uses CO₂ injection to reduce the viscosity of crude oil in the formation and force hydrocarbons closer to the surface. A gas plant servicing the field separates the CO₂ and gases from the recovered crude before sending the oil to a pipeline. Some of the separated gas is used to fuel engines at the plant and the remainder is sold. The reclaimed CO₂ is recycled by compressing it for reinjection back into the formation.

Engines and compressors at the facility were up to 30 years old. Significant performance improvements were needed to support increased production at the field.

SOLUTION

The producer turned to Windrock for assistance with four of their 2,700 hp engine-driven compressors and a motor-driven compressor. After a review of the equipment and operation, Windrock proposed installing AutoBalance™ engine fuel control systems, as well as On-Guard™ engine and compressor performance monitoring systems.

RESULTS

When the upgraded engines were re-started, the Windrock AutoBalance system began continuously monitoring the peak firing pressure in each of the twelve engine cylinders and adjusting the amount of fuel as needed. If the peak pressure of a cylinder is too high, the AutoBalance system reduces the fuel flow to avoid engine-damaging detonation and excessive exhaust emissions. If cylinder pressure is too low, the AutoBalance system increases the fuel flow to optimize performance. With engine pressures equally balanced, the engines run smoothly, regardless of variation in the compressor load, engine speed, BTU content of the fuel, or ambient air temperature.

The producer is now able to operate at higher engine loads, without fear of damaging or accidentally tripping the unit. As a result, the producer has an economic opportunity to increase oil production from the field.

For more details and information about reciprocating/rotating machinery analysis equipment and monitoring systems, contact your Windrock representative or visit www.windrock.com.



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