



# Carbon Neutral Gas Storage Facility Benefits from Waukesha VHP® Series Five Engines



The Katy Storage and Transportation (Katy) facility, owned by Enstor Gas, LLC (“Enstor”), became the first gas storage facility in the nation to become carbon neutral.

To reduce baseline emissions, Enstor swapped out their lean burn engines for rebuilt VHP Series Five engines from INNIO Waukesha. The remaining emissions are offset using carbon credits purchased through the American Carbon Registry. This methodology meets the EPA’s standard for carbon neutrality and reduction of Scope 1 and Scope 2 emissions. Enstor is proud

that these reductions will also benefit the Katy customers and reduce their Scope 3 emissions.

Multiple technologies were evaluated for emission reductions, but ultimately the VHP Series Five was chosen for its ability to reduce about 90% of Methane in the exhaust as compared to their lean burn engines, and reduce CO<sub>2</sub>e intensity by about 20%. Traditionally a rich burn engine would have consumed more fuel than a lean burn engine, but Enstor took advantage of the VHP Series Five Miller Cycle which keeps fuel consumption on par with a comparative lean burn engine.

The nine Waukesha VHP lean burn engines at Katy are being swung through INNIO Waukesha’s “reUp” remanufacturing and upgrade program. Rebuilt VHP Series Five engines have the same footprint and will be placed into the same location as the existing engines. The reUp program reduces the environmental impact of manufacturing new engines, while enabling new engine technology and performance to benefit existing operations.



A POWERFUL FUTURE

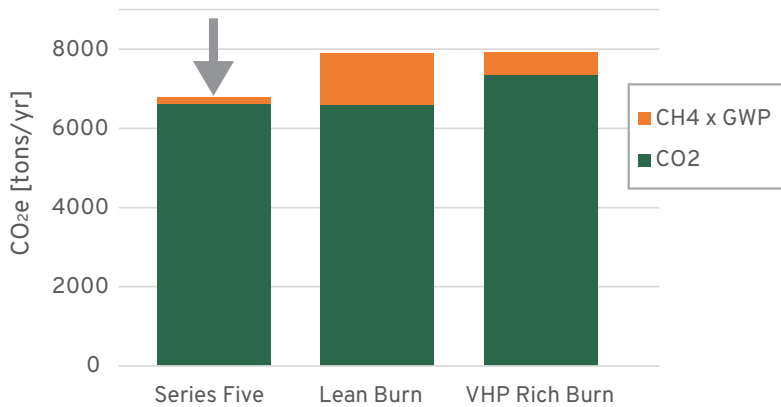
Reducing environmental impacts can be a costly endeavor, but Enstor is leading the way forward and showing that it can be completed while remaining profitable. The reUp program allowed Katy to upgrade to the latest technologies while reusing their existing infrastructure, compressors, and most of the existing package. The VHP Series Five engine can reduce CO<sub>2</sub>e output while

also lowering operating expenses with longer service intervals. Enstor did not have to choose between profitability or lower emissions, they can achieve both simultaneously.

This project is funded in part by the State of Texas through a New Technology Implementation Grant Program from the Texas Commission on Environmental Quality.



## Greenhouse Gas Comparison



Modified VHP Series Five piston design improves combustion, extends service intervals, and reduces hydrocarbon emissions.



Lower NO<sub>x</sub>, CO, CO<sub>2</sub>, and CH<sub>4</sub> emissions achieved simultaneously with VHP Series Five.

- CO<sub>2</sub>e tons/yr data normalized to 1480hp, 8760 hours per year
- Global Warming Potential (GWP) of 25 is used

**Waukesha – an INNIO® brand** - INNIO's Waukesha engines are at the forefront of the energy transition, providing reliable and compliant energy solutions for distributed gas compression and power generation applications. The brand's rich and lean-burn engines, ranging from 335 hp to 5,000 hp, set an industry standard for low emissions, high reliability, and fuel flexibility.

Waukesha products are continuously upgraded to help operators stay emission-compliant without sacrificing operational excellence. These upgrades include new and remanufactured engines and parts, as well as conversion and modification kits, all of which are backed by OEM warranty and more than 115 years of engine expertise. Additionally, our Waukesha digital solutions include SkidIQ, a collaborative solution with Detection Technologies for gas compression applications and INNIO's myPlant platform for power generation applications. Both solutions provide customers with enhanced monitoring and optimization capabilities, resulting in improved performance and reduced downtime.

We connect locally with our customers to enable a rapid response to their service needs, providing enhanced support through our broad network of distributors and solution providers with parts, services, and digital offerings.

Waukesha engines are engineered in Waukesha, Wisconsin, U.S., and manufactured in Welland, Ontario, Canada. To learn more about the company's products and services, please visit INNIO's website at [www.waukeshaengine.com](http://www.waukeshaengine.com) or follow Waukesha engines on [LinkedIn](#).

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