

Intelligent, Universal, Low-Cost Emissions **Reduction Retrofit Kit for Industrial Engines**

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The oil and gas industry accounts for about a third of all methane emissions in the United States

As a dedicated center at OU, we are at the forefront of research aimed at reducing methane emissions





Production and Processing Drilling and Gathering Processing Well Completion and Boosting Percentage Gathering and Boosting Stations Pneumatic Controllers Offshore Platforms Chemical Injection 3% Pumps Tanks Centrifugal Compressors Station Venting Completions and Engines Workovers

Liquids Unloading



Distribution

Regulators and Meters ▦ Distribution Mains/Service:







Station Fugitives

Successfully Developed a smart retrofit kit that can seamlessly integrate with industrial engines.



Project Objectives: Development and field deployments of an intelligent, universal, low-cost emissions reduction retrofit kit for industrial engines



proposed technology The includes:

- Real-time performance sensing technologies,
- ***** Advanced machine learning algorithms,
- Robust feedback control systems for engine performance management under different operating conditions.

This innovative smart retrofit kit significantly will cut methane emissions across various engine types, slashes operational costs, and improves fuel efficiency while boosting engine stability and performance.



















Measure methane PPM in exhaust streams using low-cost,

simple, Virtual sensors.

Digital Twin-based method, named PdMDT, for preemptive

maintenance scheduling and failure prediction in NGFRE

