

Methane Mitigation Success Story

The Climate Challenge

Leading energy companies are being challenged to sustainably deliver clean and affordable energy. This dual challenge of delivering more energy with less carbon emissions concerns society as a whole.

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With the challenge of reaching carbon neutrality, the energy industry will need to be transformed. Electricity alone will not be sufficient for all needs, with responsibly produced gas and sustainable biofuels providing clean alternatives to conventional fuels.

The Status Quo

Pneumatic devices powered by pressurized natural gas are widely used in the natural gas industry for process control and chemical injection. Gas powered pneumatic devices vent spent gas directly into the air, threatening the clean fuel advantages of natural gas. Methane (CH₄) is the primary component of natural gas and is recognized to have a global warming potential 84x greater than CO₂ over a 20y time horizon (IPCC AR5).

The Opportunity

Qnergy's CAP3 is an innovative product that replaces the methane emissions of pneumatic devices. Qnergy's proven PowerGen Stirling engine is the heart of the CAP3 solution, efficiently combusting normally vented methane, while economically providing reliable electric power and clean, dry instrument air. The CAP3 system conserves valuable instrument gas and eliminates methane venting at the well pad.

The Solution

Qnergy deployed a CAP3 system at a multi-well pad in the Barnett Shale formation in Texas. The purpose of this 30-day trial was to quantify and characterize the pneumatic gas and electric power requirements of a typical 4-5 well pad.

With SmartView remote monitoring, system performance was measured and logged. In 30 days, the instrument air system had mitigated the vented emissions of 42,515 ft³ of gas.



Well-pad pneumatic emissions reduction data at your fingertips

Instrument Air Data

ACCUMULATED AIR SUPPLY:
42,515 scf

AVERAGE AUTOMATION POWER:
140W

AIR PRESSURE:
115-145 psi

AIR FLOW RATE:
1.0 scfm

ANNUALIZED CO₂ ABATEMENT:
900 tCO₂e/y

Moving Forward

TotalEnergies has decided to install this new technology by deploying 100 units on the Barnett field in 2021 and 2022. The deployment of 300 additional units throughout the field will reduce methane venting emissions from pneumatic devices by approximately 7,000 tons of methane a year by end 2024.

Qnergy's compact CAP3M and Nano packages can be delivered standalone for grid powered sites. However, many well pads are in remote locations and suffer from a lack of reliable and sustainable electric power. High grid extension costs can make electrification prohibitive and permitting delays can be a scheduling challenge. This is where the PowerGen shines, delivering prime power while eliminating the need for large UPS or cycling battery banks. These right-sized systems can maximize system value, driving down the cost of methane abatement below \$5/tCO₂e.



Upto 3 scfm air flow

CAP3 nano
Compressed Air Pneumatics



Up to 11 scfm air flow

CAP3M
Compressed Air Pneumatics

// We have successfully demonstrated the effectiveness of Qnergy's technology on the Barnett field. By immediately deploying this technology on our US onshore operations, we are actively demonstrating our commitment to reducing our own methane emissions by 20% between 2020 and 2025.

Carole Le Gall, Senior Vice President
Sustainability & Climate at TotalEnergies

About Qnergy

Qnergy provides power solutions that work reliably with a broad range of heat sources including raw natural gas and biogas. Qnergy's Stirling engines are enclosed, frictionless external combustion systems that require no lubrication, oil-change or repair and can deliver tens of thousands of hours of uninterrupted operation. Qnergy leverages it's reliable off-grid power to drive air compressors that help the natural gas industry eliminate methane emission from pneumatic devices.

qnergy.com/compressed-air-pneumatics-cap3/



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