



Powering Methane Abatement

Qnergy's Innovative Compressed Air Pneumatics (CAP) Solutions

December 2, 2024



About Qnergy

- Best-in-Class technology for remote well pad Methane Mitigation
- Products eliminate methane emissions from pneumatic devices
- More than 2,000 units installed
- Qnergy's 'plug and play' solutions are reliable and require minimal maintenance
- Scalable solutions for any well pad
- Proprietary Free Piston Stirling Engine runs on instrument gas at off-grid sites

Qnergy's products are proudly designed and manufactured in North America



Qnergy Product Lines

Remote Power



PowerGen
5650kW

Based on
proprietary
Free Piston
Stirling Engine

Compressed Air Pneumatics (CAP)



CAP Pico
0.5-1 scfm

Smallest air
package with **solar**
option or grid-tied



CAP V Series
3, 5.5, 10.5 scfm

Compact
design optimized
for higher flow
applications



CAP M
7.5 scfm

All weather
reach-in
enclosure



CAP F
12 scfm

Large walk-in
shelter with
auxiliary
equipment space

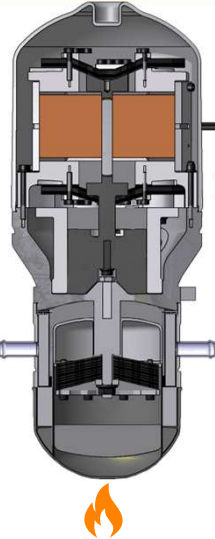
Patent pending design with built-in redundancy

Additional models and configurations available

Remote Power Leaders with Free Piston Stirling Engine

A sealed external combustion engine converts unrefined methane to clean energy

Linear Free Piston Stirling Engine



Welded, **hermetically** sealed engine

Proprietary flexure bearings = **No rotating parts, friction, or lubrication**

Simple design with only **66 parts**

Electronic Control



Proprietary firmware and hardware allow **accurate engine control** in real time

PowerGen 5650

No methane slip

Clean - negligible CO and NOx

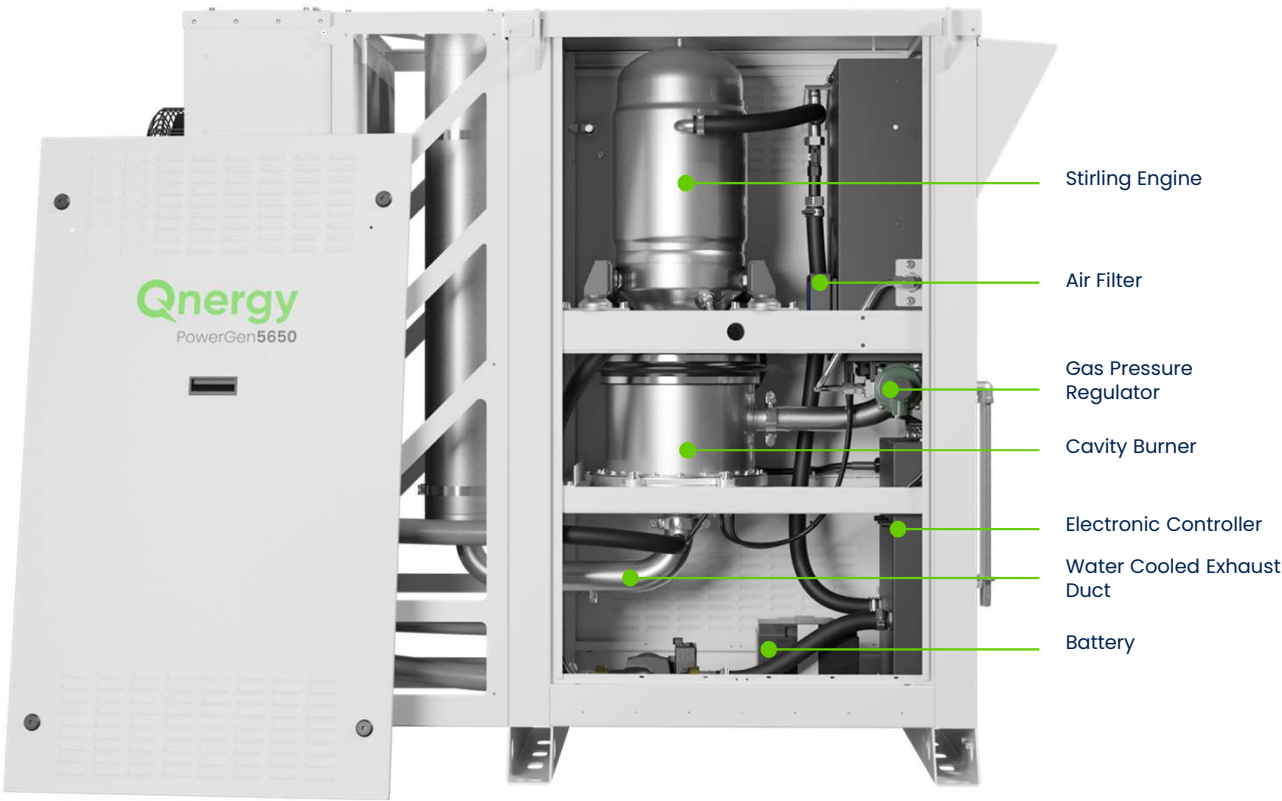
Works with unrefined gaseous fuels

Minimal maintenance required



PowerGen Cross Section

Minimal maintenance and **100% methane destruction**



Emissions	Values (English Units)	Values (SI Units)
NOx @ 5% O ₂	30.0 ppm	66.0 mg/ kWh
CO @ 5% O ₂	9.0 ppm	12.0 mg/ kWh
VoC	Negligible	Negligible
CO ₂	0.1 lb/kWh	0.24 kg CO ₂ /kWh

Fully enclosed combustion chamber
Exhaust is diluted and exits at below < 200°F
All surfaces are cooled

All Weather Operation



Available

With well-head gas, piped gas, propane, biogas, and hydrogen



Proven

Hundreds of systems in harsh conditions



Trusted

To operate for tens of thousands of hours

Off-Shore



Off-shore Installation demonstrating corrosion resistance

Hurricanes



A generator in Louisiana working through **Hurricanes** Laura and Delta

Sandstorms



A generator in Mexico working through **sandstorms**

Arctic Temps



Remote cell tower in Alaska working at **arctic temperatures** below -40°C

Earthquakes

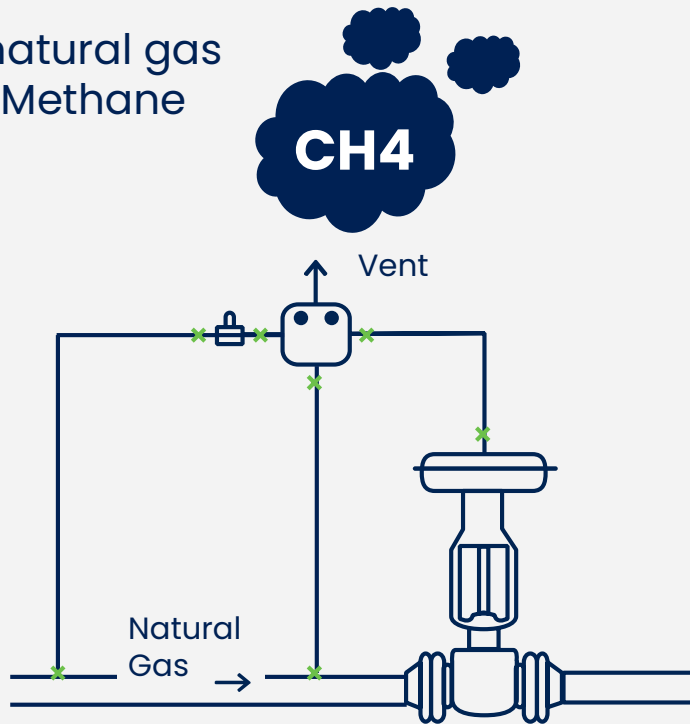


A generator in Michoacán state Mexico operating through 6.8 **Earthquake**

Replace Methane Venting with Clean, Dry Air

Today

- Use natural gas
- Vent Methane

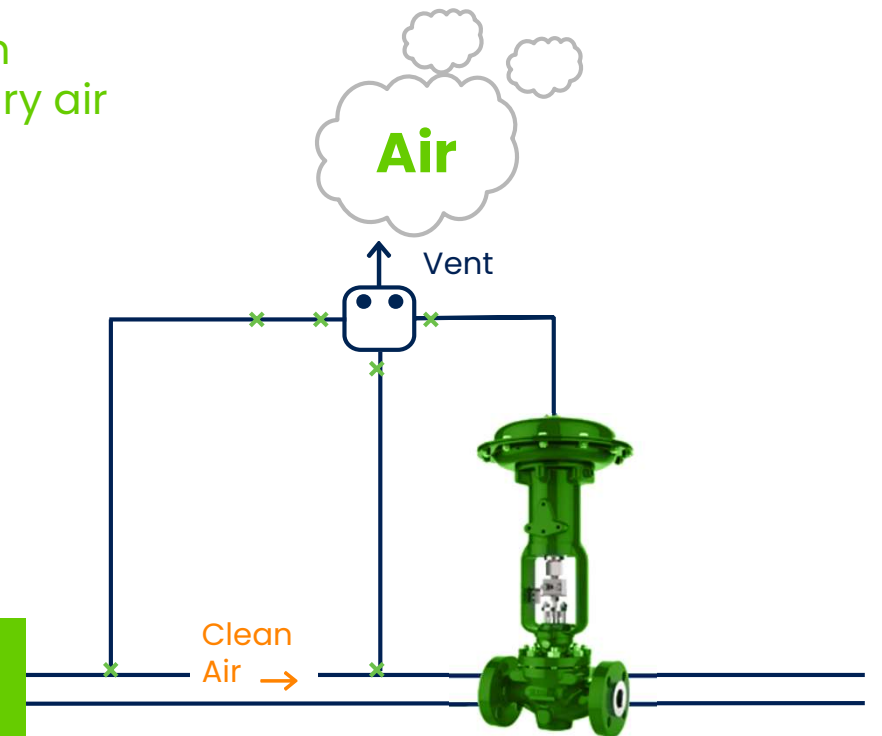


Compressed Air Pneumatics (CAP)

- 'Plug and play' design
- Use and vent clean, dry air



CAP with PowerGen
or Grid Power

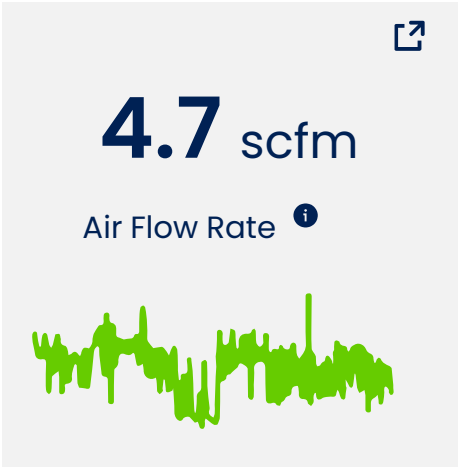


CAP V Series – 3, 5.5 or 10.5 scfm

Compact design optimized for higher flow applications

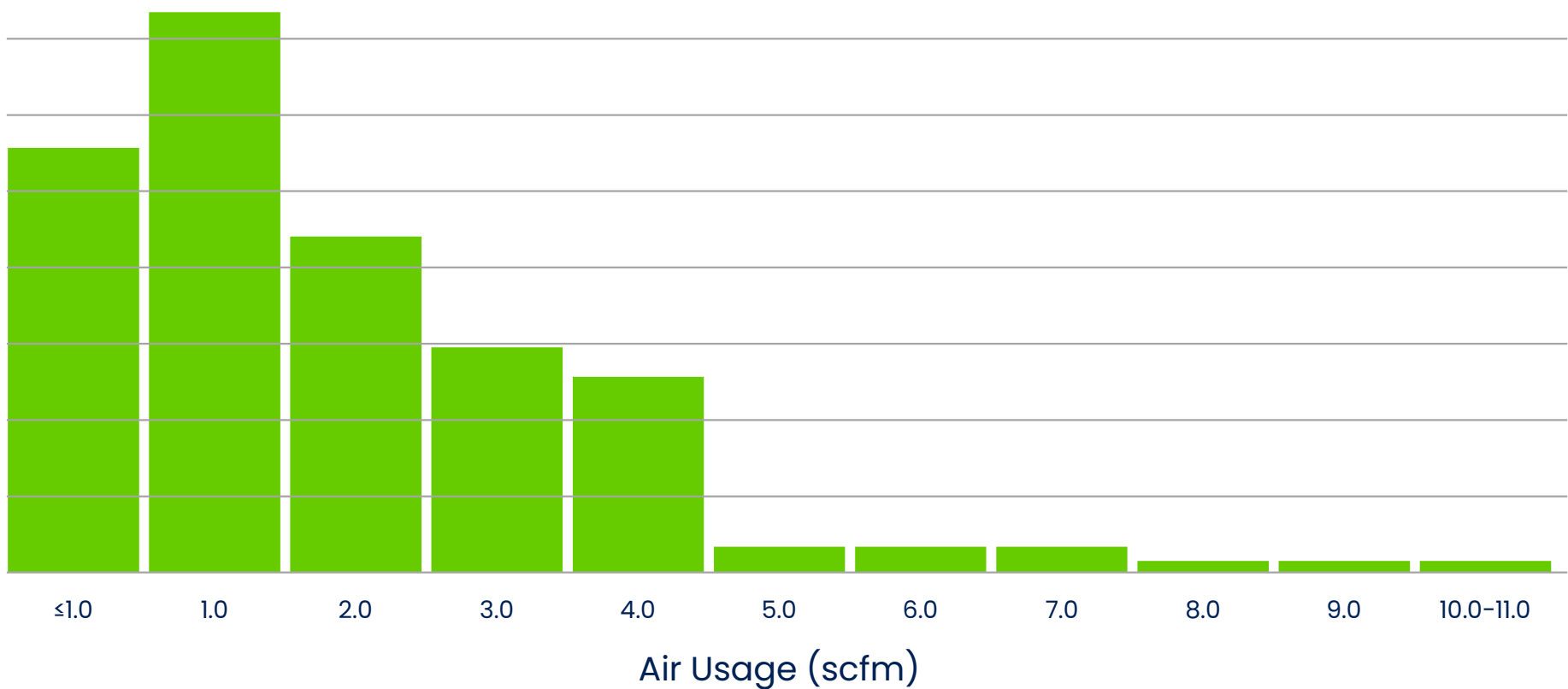
Key Parameters

Compressor	Duplex oil-free scroll
Dry Air Flow	3, 5.5, or 10.5 scfm at 130 psi
Max Pressure	Up to 140 psi
Max Power Consumption	4000W
Dry Tank Capacity	2 gal (7.57 L) <i>requires 40 gal external</i>



Our Experience Leads to Up-Time and Efficiency

Our expertise and customer air survey inform the most efficient and cost-effective air package



With **thousands of installations**, our team of engineers understand the **most efficient** and **cost-effective** solutions to meet the unique air demands of **any site**.

Our Latest Product: CAP Pico

Smallest air package with solar PV option

Key Parameters

Compressor	Redundant Brushless DC
Dry Air Flow	0.5 scfm – standard 1 scfm – expanded ¹
Max Pressure	Dual pressure output 35/100 psi
Dry Tank Capacity	20 gal

¹ Performance depends on solar size and location



Pico Plus



Pico



Compressed Air Pneumatics: Key Advantages



Eliminates methane emissions from bleeding pneumatic devices using compressed air to **meet 0000b/c** regulations



A proven abatement solution for **Pneumatic Devices** at less than \$1/tCO₂e



Clean, dry instrument **air** to end user



Powered directly by **grid** or Qnergy's Free Piston Stirling Engine

Technology Overview:



Oil-free technology



Dual compressors



Air receiver



Air filtration



Regenerative dessicant dryer



Digital flow meter



Dual pressure sensors



Auto start controls



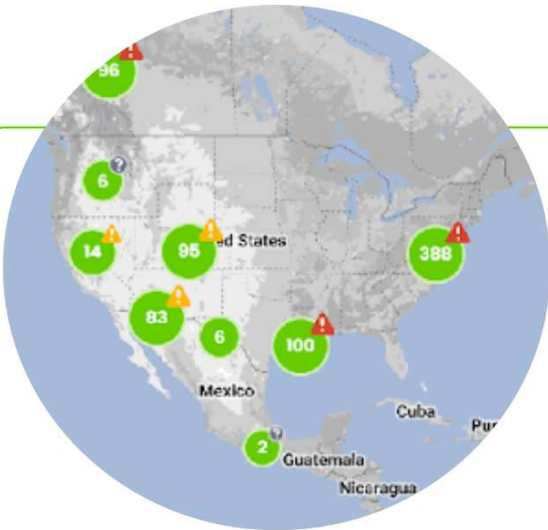
Alarms and notifications



IOT and API user interface

Continuous Methane Reporting

Qnergy Dashboard and API
Connecting customers and products to ensure uptime and methane reporting



Cellular &
Satellite Comm



Remote Firmware
Upgrade



Real Time
Reports



Tracking
Emissions



Remote
Support



Early Alerts

Subscription
Dashboard and API

Methane Reporting
Reporting and Compliance

Service
On-Site and Remote

Qnergy In the Field



Thank you

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