



APGA Innovation Awards submission: Remote Power Innovation with Qnergy PowerGen, Free Piston Stirling Engine (FPSE)

PowerGen FPSE: Transforming Remote Site Power Requirements

Qnergy's PowerGen, Free Piston Stirling Engine (FPSE) fully Australian compliant, Type B certified, autonomous off-grid power for pipelines, wellhead sites, cathodic protection, offshore platforms, and other remote industrial operations. PowerGen eliminates diesel/gas gensets and high-maintenance equipment, reducing fuel logistics by up to 80% and site visits by over 70%. Its hermetically sealed, low-maintenance design ensures ultra-reliable, digitally connected power in the harshest environments, while seamlessly integrating with solar, pneumatic, power solutions.

Overview

PowerGen is the world's only commercially available, hermetically sealed Free Piston Stirling Engine generator that converts raw gas sources into dependable electrical power (600 W – 5.6 kW, scalable to 25 kW+). With no lubricants, no rotating parts, and no mechanical wear, PowerGen operates continuously for 10–15 years with only an annual visual check. Already deployed in over 3,000 installations worldwide. PowerGen is redefining what's possible in pipeline, wellhead, offshore, and other remote industrial operations.

Innovation and Originality

PowerGen's hermetically sealed FPSE design enables long-term autonomous operation with zero overhauls. Performance from -40°C to $+50^{\circ}\text{C}$, across remote assets in challenging industrial environments. Integrated remote monitoring and predictive maintenance via the Qnergy Dashboard make PowerGen a truly "set-and-forget" digital power platform. The system can complement solar arrays and pneumatic instrument needs, replacing diesel/gas-powered equipment, increasing, reliability, and sustainability.

Industry Impact

PowerGen enables reliable power in locations where grid access, solar, or traditional generators are impractical. Operators of pipelines, wellhead sites, offshore platforms, and remote industrial facilities are cutting operational expenditure by up to 50%, eliminating diesel runtime, and reducing risk exposure associated with fuel delivery. Methane destruction efficiencies of 99.99% support decarbonisation and regulatory compliance.

Scalability and Flexibility

PowerGen accepts natural gas, propane, or unrefined wellhead gas, providing maximum deployment flexibility. Cathodic protection, instrumentation systems, and solar or pneumatic setups. Modular scaling enables tailored power solutions from single-well pads to multi-site pipeline clusters or offshore platforms, ensuring a reliable, power solution for remote operation.

Compliance and Safety

PowerGen is fully compliant with Australian standards, including Type B certification, ensuring safe deployment in all regulated industrial environments. Its autonomous, low-maintenance design reduces site visits and safety risks.

Alignment with APGA Strategic Goals

- **Advancing Safety & Reliability:** Autonomous operation reduces physical site presence and safety risk.
- **Promoting Innovation:** Combines advanced thermodynamics with digital diagnostics for next-generation pipeline operations.
- **Supporting Decarbonisation:** Ultra-low emissions and methane destruction support ESG and compliance initiatives.
- **Building Workforce Capability:** Simplified maintenance and remote dashboards enable upskilling in digital energy systems.
- **Driving Industry Growth:** Proven globally, PowerGen enables energy delivery in regions where traditional solutions fail, while preparing infrastructure for readiness and methane capture technologies.

Conclusion

PowerGen FPSE provides a future-ready, field-proven solution for safe, sustainable, and digitally enabled pipeline power. Backed by >10 years of global deployment and now supported in Australia, it offers APGA members and industry a compelling opportunity to reimagine remote operations. We welcome the opportunity to present PowerGen at the APGA Convention & Exhibition and provide detailed technical data as required.

Commercialisation Partner – Australia

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