

### Customer Motivation:

Seeking an ultra-reliable, minimal maintenance prime power system to charge batteries at a remotely located (helicopter access-only) Railroad Telecom Site in Alaska.

Prior to installing the PowerGen 5650 the customer previously used Solid Oxide Fuel Cells to charge batteries and keep their remote telecom locations operational. While Solid Oxide Fuel Cell technology is an advancement over traditional gas/diesel generators they're not particularly well suited for prime power applications as their stack life is limited and will quickly need to be replaced. When properly applied, Solid Oxide Fuel Cells are best suited for extended-run backup power applications. After recurring issues and frustration with the Solid Oxide Fuel Cells the customer knew they needed a different, properly applied solution for their unique prime power needs.

### PowerGen 5650 Series

Pioneered in space and designed for rugged and remote operation, Qnergy's PowerGen 5650 Series Stirling Engine Generator powered by propane provides 5.6kW of electrical power supply to this critical Railroad Telecom Site in Alaska to charge batteries and power ancillary equipment. After discovering how fuel efficient the PowerGen is the customer decided it was best to continuously run the unit. The PowerGen 5650 is truly a maintenance-free solution that offers **80,000+ hours** of reliable performance, two key features that make it an ideal and cost-effective power source for this remotely located Railroad Telecom Site in Alaska in lieu of Solid Oxide Fuel Cells.

### Stirling Engine Technology

Qnergy's Free-Piston Stirling Engine (FPSE) generator can transform virtually any heat source into electricity. Once heat is applied to the FPSE the heat exchangers maintain a temperature differential across the engine causing the helium to shuttle back-and-forth inside the engine, expanding and contracting. The oscillating helium drives the linear reciprocating motion of the piston, which by means of an integral linear alternator, directly converts the reciprocating motion of the piston into electrical power.

The Qnergy engine has fewer moving parts than traditional kinematic Stirling Engines, and no direct-contact points that cause wear and require lubrication.

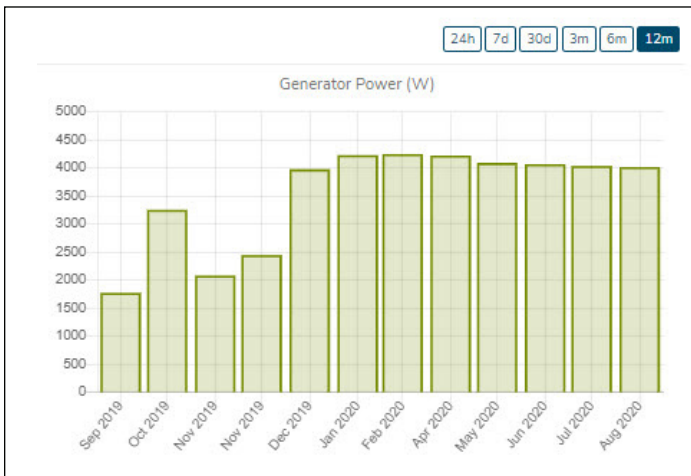
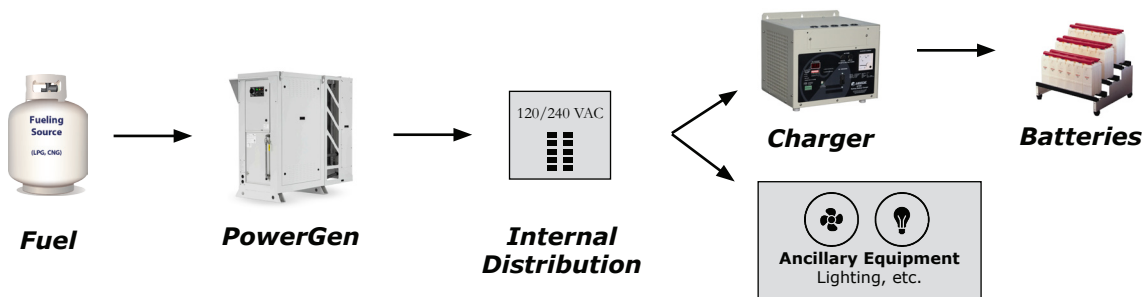


# Case Study

## PowerGen 5650 Providing Prime Power to Railroad Telecom Location in Alaska

### Prime Off-Grid Power

The PowerGen 5650 is a prime power generator for this remote location where utility power connection is simply unavailable. Powered by propane the PowerGen's standard 120/240 VAC output feeds the sites distribution panel to feed a charger to charge batteries and/or feed power to ancillary equipment.



### Remote Monitoring

The PowerGen 5650 is equipped with Qnergy's SmartView Remote Monitoring System. This web based monitoring solution allows the end user to view real-time and historical operational data on their desktop computer, laptop or smartphone.

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