

Customer Motivation:

Seeking automated and reliable backup power systems to protect critical rail wayside assets in the event of an extended utility power outage caused by weather events prone to area.

Consideration of Fuel Cells?

The conventional approach and one that rail customers have used for years is to deploy gas/diesel generators to backup critical wayside assets in times of crisis due to their wide power range, mass market availability and low initial cost. What's often overlooked is the frequent attention and on-going maintenance required to keep gas/diesel generators operational. You have to refuel every 8-10 hours, change oil every 100 hours and even replace the generator after a few events with heavy use. In addition gas/diesel generators are noisy, have dirty emissions and are prone to theft by outsiders in times of crisis.

Compared to gas/diesel generators, the P250i Solid Oxide Fuel Cell has no moving parts, needs no oil changes or routine maintenance and can operate quietly and efficiently for years of trouble-free backup power operation.

System Operation

The P250i Solid Oxide Fuel Cell is a DC power generator that works in conjunction with batteries. Powered by readily available, easily transportable and low cost propane, the P250i can sit in standby mode for months to years at a time monitoring battery voltage. The P250i utilizes voltage sensing leads and a remote temperature probe to detect the actual battery voltage and temperature. When batteries dip below a certain pre-determined lower threshold voltage, the P250i will automatically start and after a brief startup period (25-30 minutes) will charge the batteries and power the load. Once the batteries are fully charged (upper threshold voltage is reached), the P250i will automatically begin to cooldown and return to standby mode. When equipped with (2) BBQ style propane tanks, the P250i can provide 130-160 hours of runtime.

Quick Specs:

- **Power:** 250W
- **Nominal Voltage:** 12 / 24 / 48 VDC
- **Nominal Charging Current:** 20A / 10A / 5A
- **Operating Temperature Range:** -40°F to 158°F
- **Design Life:** 250 Start/Stop Cycles or 3,000 Hours



The P250i Solid Oxide Fuel Cell is housed inside of an NEMA outdoor rated enclosure that can be foundation, pad or bungalow mounted (pictured above).