

POWERING TELECOM APPLICATIONS EVERYWHERE WITH MODERN TECHNOLOGY

Deliver non-stop, reliable power with fuel flexibility, regardless of location

Telecom carriers increasingly compete to provide voice, video and data services to customers. Customers expect constant connectivity. Power outages not only equal loss of connectivity, but loss of safety/security, especially in remote locations – which customers no longer tolerate. Backup power must be a priority, not an afterthought.

Batteries and generators have been the popular choices for backup power, not because of their superior technology, but because of corporate inertia. However, batteries typically cannot provide the long runtimes and require frequent replacement, while generators are dirty, noisy, large and break down too often. Theft of these assets may also be an issue.

Altery has developed breakthrough fuel cell technology built to the highest standards, delivering the most reliable, cost effective backup power solution available today. These next generation solutions allow telecom providers to modernize their networks and meet customer connectivity and long runtime demands.

For locations where hydrogen fuel may be difficult to obtain, Altery offers an advanced fuel cell backup power system integrated with a state-of-the-art hydrogen gas generator. Altery's Freedom Power System EX (EX for extended runtimes) delivers a reliable backup power system that can integrate seamlessly with established network infrastructure, simplify fuel logistics and provide extended runtimes.

With the largest deployed fuel cell fleet in telecom and CATV, Altery is the trusted backup power partner since 2001.

Altery's Freedom Power fuel cells provide freedom from:



Altery's Freedom Power System EX (FPS-EX)

Fuel flexibility where hydrogen availability is limited

- Extended runtime up to 100 hours
- Eliminate well known issues with batteries and generators
- Simple, low-cost maintenance
- Zero-emission fuel cell certification supports sustainability initiatives
- Reduce theft of batteries, generators and fuel
- Made in USA

Altery Fuel Cell FPS-EX (Patent Pending) Engine with Integrated Hydrogen Gas Generator



Installations of the Altery Reformer in the Bahamas

Altery Freedom Power System EX (FPS-EX)

Output	Rated Standby Power	5 kW
	Nominal Current	105
Voltage	Rated (VDC)	48
Input Power	48V Nominal	246W (standby)
Physical	Dimensions (W x D x H)	48 x 42 x 53 in. / 122 x 107 x 135 cm
	Weight	876 lbs. / 397kg
Fuel	Type and Grade	Methanol-water mix reformed into gaseous hydrogen
	Tank Size	100 Gallons / 378 liters
	Consumption (Liters Per Hour)	1-1.4 liters / hr / kWh
Operational	Ambient Temperature	-20°C to 46°C (GR1293)*
	Relative Humidity	5% to 95% non-condensing
	Location	Outdoor Use Only
	Altitude	-200 to 10,000 feet
Control Electronics	Monitoring Software	Real time control communications with GUI to provide system and site status and allow user input of operating parameters. Field upgrades through communication port.
	I/O Interfaces	RS-232, RS-485 and ethernet supported. User-defined dry contacts. Optional wireless monitoring.
Environmental	Noise	<60dBA @ 7 meters
Fuel Cell Engine Safety / Certification / Compliance**		CSA / ANSI FC 1-2014 (fuel cell) and CSA / ANSI FC 5-2017 (reformer), FCC 47CFR Part 15, Subpart B, Class A

Specification subject to change without notice. *Cold weather kit for temperatures below freezing. **Some certifications pending.

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altery[®]
Leading the
Fuel Cell Revolution

Why Choose Alteryg's Hydrogen Gas Generator FPS-EX Fuel Cell System vs. Diesel Generators?



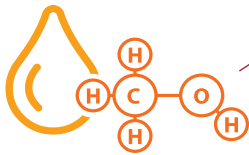
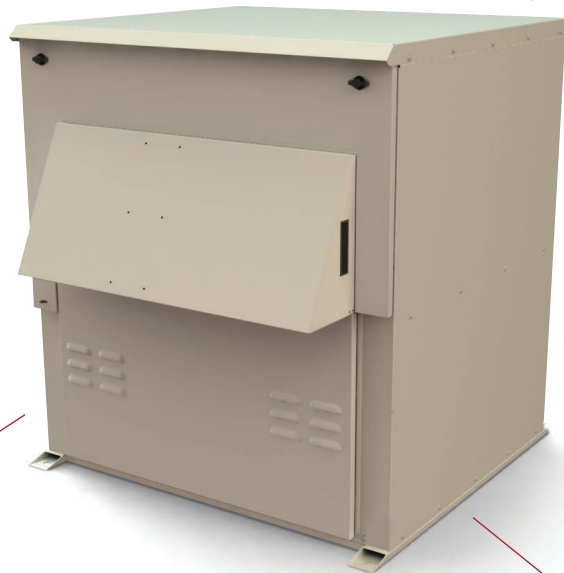
Efficient & Reliable:

- Extended runtime up to months of operation
- Applications available in remote, hard to reach locations
- Direct DC power output
- No need to over-size capacity for load transients
- Easier and less costly to permit



Sustainable:

- Hydrogen – non carbon fuel
- Near zero emissions
- No engine oil oxidation, bore glazing or black smoke
- Quiet operation



Better Fuel:

- Diesel storage shelf life 28 days vs. unlimited with Methanol
- No fuel mold microbe contamination or additives required
- Methanol is less flammable than gas
- Cold weather reliability (-70 degrees C)
- No cold weather fuel gelling



Cost Effective:

- Lower total cost of ownership
- Eliminates fuel theft
- Simpler maintenance and operations
- US investment tax credit available

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