

Powering your process. Protecting your business.

The First Element Advantage

- **Save costs** over battery installations
Cheaper than diesels for baseload use
- Superior systems communications, high power density & wide environmental operating range
- Baseload power capable, multi year life
- **Fuel flexibility!** Hydrogen or Methanol

MODULAR AIR-COOLED FUEL CELL SYSTEMS FOR BACKUP POWER APPLICATIONS

Scalable from 2-15 kW in a single OSP cabinet

DC and **AC** power

Hybrid solar systems available

Applications

Communications: Cell & Microwave Towers, Wire-line cabinets, Central Office Switch & POP sites

Business and Building Backup

Utility substation backup. Railroad communications, signaling & switch protection.

Government & Military Communications

Fuel Cell Advantages

Environmentally Friendly, Minimal Maintenance

High Reliability & Longer Life

Equipment Integration, smaller site footprint

NEW, **Fast-Deploy** cabinet option, NO concrete pad needed!



4-Door Fuel Cell & Fuel Cabinet

Integrated: 15 kW Fuel Cell, AC Output Shown

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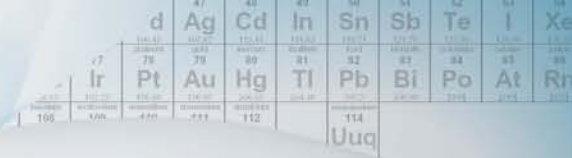
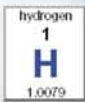
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Product Specifications for Air-Cooled Fuel Cell Systems						Std. units
Systems are modular						
Model	2.5 kW	5 kW	7.5 kW	10 kW	15 kW	
Nominal Voltage (typical DC)	24 or +/- 48 V, custom voltage available on request					
	Adjustable voltage output, +/- 15% of nominal					
Run Time per Fuel Cabinet* (hours)	31	15.5	10.3	7.8	5.2	
Cylinders Required for 8 hours**	3.0	5.0	7.0	9.0	13.0	
Physical						
System & Cabinet Weight (lb)	816	860	925	970	1080	
	Weights are for fuel cell & aluminum cabinet, does not include batteries, fuel reformers or options					
Cabinet Materials	Aluminum, Stainless Steel or Steel. Power Coating finish available					
Cabinet Dimensions (W x D x H)	Std 2-Door: 36 x 39 x 86 in. 4-Door available.					
	Batteries may be added to the 86 in., standard 3-10 kW cabinet					
Operation						
Total Station Cabinet Option	Integrated 2 RU High-Efficiency AC/DC rectifier & UPS batteries					
Power Conditioning	DC	DC/DC converter, load following, remote-real time controllable output				
	AC	Optional DC/AC inverter, load following, 50 or 60 Hz, 120 / 2xx VAC selectable				
Fuel	Standard Industrial grade hydrogen (99.95%)					
Fuel Storage Cabinet	(8) Standard "T" cylinder capacity. Optional auto-change over exercise cylinder regulator available					
Ambient Temperature, (deg. F)	Rated power maintained from: -4° to 105° (High temp kit available) ((Must start above 32°))					
Relative Humidity, (% RH)	5 - 100					
Std. Altitude Capability, (feet)	< 10,000	< 10,000	< 10,000	< 10,000	< 10,000	
	Altitude compensating kit available for elevation above standard					
Shipping Exposure, (deg. F)	-40° to +158°					
Controls						
Software	Industrial PLC					
Safety	Full system and hydrogen alarms					
Certifications	Components UL/CSA, Stack: CSA, Cabinet NEBS exposure on request					
GUI (Graphical User Interface)	Standard 3" LCD & keypad or Optional 6" color industrial screen					
	Laptop or desktop computer, optional					
Remote System Communications	3 - 5 Dry contact alarms standard					
	Fiber, LAN or Wireless Network					
	Cellular / Phone modem					
Data / Software	FULL remote command & monitoring via internet					
	Optional Run-time data collection storage, local or remote & software upgrades					
Emissions						
Water	None					
Noise	TBD					
CO, CO ₂ , NOx, SOx	Emissions free, < 1 ppm, fuel cell system using hydrogen gas as fuel					
Fuel Options						
Liquid Fuel Processing Systems. Information on separate spec sheet.						
* Based on 8 "T" cylinders per bottle cabinet						
** Rounded up to whole cylinder. Fuel usage based on 250 ft ³ usable volume per cylinder at max. power, consumption varies with power and configuration.						
Product Specifications are subject to change at any time.						