Palcan

Green Power for Green Earth

Palcan Energy, a Vancouver based international corporation is committed to developing and commercializing renewable energy products. Palcan dedicated all its resources to the development of PEM fuel cells and metal hydride hydrogen storage technologies since 1998. Palcan developed the world's first fuel cell powered scooter/bicycle and solar PV–fuel cell regenerative systems.Today, Palcan is a worldwide recognized renewable energy technology company.

R&D facility located in NRC Center

Palcan offers three lines of products:

- Palcan Power Generators:
  - A) Palcan Mobile Fuel Cell Portable Generator (high mobility)
  - B) Palcan Fuel Cell Power Generator (backup power or UPS configurations)
- Palcan Metal Hydride Hydrogen Storages and Chemical Hydride Hydrogen Genarator
- Palcan Integrated Off Grid Renewable System using solar/wind

Palcan's long term objective is to provide renewable energy turnkey products for human beings in all applications through continuous innovation and focus on product improvement.

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Fuel Cell Backup Power(UPS) Supply for Telecommunications Industry

In critical backup power applications, such as data centres and telecommunications operators, even brief power outages can be extremely costly. Typically, these users have relied on cumber-some banks of batteries and/or diesel generators for backup power. The drawbacks are inconsistent power, limited runtime, physical plant issues and refueling logistics.

Hydrogen is a better solution.

The backup power systems incorporating our Fuel Cell Power Modules offer consistent power, seamless switching and virtually limitless runtime. Our fuel cell power modules can be easily integrated with methanol reformer or metal hydride hydrogen storage canisters which offer safer and easier refilling solution for the customers..

Content	Parameters		
Model Number	C2000	C3000	C5000
Output Voltage	48VDC		
Voltage Range	46-57VDC		
Dimensions	800*600*1240mm	800*600*1250mm	1100*570*2000
weight	80kg	150kg	200kg
Hydrogen Utilization	95%		
Coolant Type	Air		
Oxidant Type	Air		
Hydrogen Pressure	<1MPa(ambient)		
Noice	<50db		
Working condition （temperature）	-20～50℃		
Working condition （Humidity）	0～95%RH		
Startup time	<10ms		
Control System	MCU, LCD Screen, auto alarm, SNMPv2c, remote wireless monitor		

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Portable Power Supply:

Palcan's new generation of portable generators uses the world's most advanced fuel cell proprietary technology. It's ergonomical design comes in two formats;(i)trolley cart design and (ii)hand carried version.Both formats are light weight making them easy to use.

Both portable generators provide reliable power output with zero exhaust except for warm water, it's only by–product.

The portable generators can be used in multiple applications such as short–term standby power, in your home, while traveling, camping, boating and many other outdoor activities. It is also handy for recharging anything from electric bicycles to computers.

Technical/Performance Parameter:

Content	Parameter	
Model Number	Palcan–P750	Palcan–P750B2
Fuel Cell Type	PEM	
Output Voltage	AC220V	
Rated Power	500W	
Start-up to Full Load	<30s	
Dimensions	425×365×420mm	225×410×325mm
Total Weight	26kg(Include Hydrogen Fuel)	15.5kg
Use of Time	>100min(Rated Power)	——
Oxidant Type	Air	
Hydrogen storage Type	Metal Hydride	
Hydrogen Inlet Pressure	<1Mpa (25℃)	
Hydrogen Utilization	>95%	
Coolant Type	Air	
Operating temperature Range	0~40℃	
Operating Humidity Range	0%~95%RH	
Control System	MCU	

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Backup Power (UPS) Supply for Residence or Telecom Industry:

Palcan's new generation of cabinet–style backup power can house multiple integrated modules to achieve whatever power levels are required in a very small footprint.

These systems are designed to meet the demanding requirements of the telecommunications industry as well as many other backup applications.

These backup systems provide users the assurance and confidence that their essential power requirements will be met in the event of any unexpected power outage, quietly and safely.

Technical/Performance Parameter:

Content	Parameter	
Model Number	Palcan–R3000	Palcan–R6000
Fuel Cell Type	PEM	
Output Voltage	AC220V/DC48V	
Rated Power	2000W	4000W
Start-up to Full Load	Buckup/Online	
Dimensions	450×650×485mm	600×800×1250mm
Total Weight	48kg	130kg
Oxidant Type	Air	
Hydrogen storage Type	Metal Hydride	
Hydrogen Inlet Pressure	<1Mpa (25℃)	
Hydrogen Utilization	>95%	
Coolant Type	Air	
Operating temperature Range	0~40℃	
Operating Humidity Range	0%~95%RH	
Control System	MCU	

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Metal Hydride Hydrogen Storages:

Palcan's proprietary hydrogen storage system replaces the heavy high pressure cylinders presently used to store hydrogen. Palcan's canisters comes in various sizes and configurations to meet any client's requirements.

Palcan's storage canisters are designed to meet all safety codes to safely store them anywhere and to deliver the right amount of pure hydrogen for its application.

Technical/Performance Parameter:

Content	Parameter	Parameter
Model Number	Palcan–H600	Palcan–H6000
Hydrogen Storage Type	Metal Hydride	
H_2 Storage Capacity	600SL	6000 SL(600×10)
Dimensions	Φ81×330mm	440×240×680 mm
Total Weight	6.5kg	59.5 kg
Operating Temperature	0~40℃	
H_2 Delivery Rate @20℃,Air Environment	0~10SLPM	0~160SLPM
Hydrogen Inlet Pressure	<1Mpa（25℃）	
Rated Charging Pressure	1Mpa	
Cycle Life	>500	
Container Type	Aluminum Alloy	
Container Safe Pressure	>15Mpa	
Rupture Disc Burst Pressure	5Mpa	
Hydrogen Purity	>99.95%	

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Integrated Renewable Power Sources:

Palcan's new integrated energy generating system is the most secure way to create and store energy in remote off grid locations.
Palcan's system integrates solar and / or wind systems to produce hydrogen, which is stored and released via Palcan's storage system and when required provide fuel to Palcan's fuel cell when electricity is required, day or night, rain or shine.
The entire system consists of: solar and / or wind generator, electrolyzer module, metal hydrogen storage system, fuel cell generator and local or remote control system. The system provides clean and stable energy on a more reliable and consistent basis than solar or wind systems.

Technical/Performance Parameter:

Content	Parameter	
Model Number	Palcan-X3000	Palcan-X12K
Renewable Energy Type	Solar or Wind	
Fuel Cell Type	PEM	
Output Voltage	AC110V/DC48V	
Output Power	2000W	8000W
Start-up to Full Load	Backup/Online	
Oxidant Type	Air	
Hydrogen Storage Type	Metal Hydride	
Hydrogen Utilization	>95%	
Coolant Type	Air	
Operating temperature Range	0~40℃	
Operating Humidity Range	0%~95%RH	
Control System	MCU	

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Palcan-B8C Mobile Hydrogen Generator

Palcan's new generation of mobile chemical hydrogen generator produces hydrogen through catalytic hydrolysis of sodium borohydride which in turn safely provides the required hydrogen fuel for Palcan's PEM based fuel cell system.

Palcan's-B8C has achieved significant advancements over similar hydrogen generators by providing real-time control of the hydrogen production rate through hydrogen output pressure.

Palcan's B8C generates a safe, non toxic by-product of sodium metaborate, which can be easily recycled or discharged.

Technical/Performance Parameters :

Content	Parameter
Model Number	Palcan-B8C
Rated Hydrogen Output	8 L/min
Hydrogen Output Pressure	<500 KPa、≥50 Kpa
Startup Time	＜5min
Dimensions	340×200×430
Weight	17.5Kg
Fuel Material	12wt.%$NaBH_4$
Average Power Consumption	≤10W
Operation Temperature	0~50 °C
Operation Humidity	0%~95%
Control System	MCU、LED Display

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Palcan's New Hydrogen Generator Series of Solid Polymer Electrolyte Water Electrolysis

Palcan is pleased to announce the development of a suite of electrolysers that produce high purity hydrogen to fuel Palcan's fuel cell systems in off grid environments. These electrolysers add to Palcan's ability to generate pure hydrogen where the grid is not available , namely Palcan's methanol reformers and now Palcan's electrolysers.

Palcan's electrolysers use a solid polymer membrane as its water electrolysis electrolyte thereby overcoming the shortcomings of conventional alkaline water electrolysers for : (I) hydrogen and oxygen crossover and (ii) alkali corrosion.

The produced hydrogen is dry and the output pressure is over 1 MPa and can be stored in Palcan's metal hydride hydrogen storage devices without special compression equipment.

Palcan's electrolysers are each equipped with Palcan's Energy Management System (EMS), to integrate with solar panel arrays and/or wind turbines.

Palcan's new hydrogen generator series when integrated to the balance of it fuel cell system can provide the energy for a multiple of applications giving: robust , safe , stable operation , that is environmental friendly with low maintenance costs.

Technical/Performance Parameters :

Content	Parameters			
Model	B100E	B200E	B500E	B1000E
Hydrogen production rate	100L/h	200L/h	500L/h	1000L/h
Hydrogen delivery pressure	1.3MPa			
Purity	99.99%			
Hydrogen dew point	-40℃			
Electrolyte	Solid polymer electrolyte			
Maximum water consumption	0.1L/h	0.2L/h	0.5L/h	1L/h
Power requirement	AC110V/220V、50Hz			
Whether or not require the build-in water treatment	Yes	Yes	Yes	Yes
Power Consumption	1.2KW	1.9KW	4KW	8KW
Dimension (cm)	65×50×70	80×60×80	80×60×90	80×70×90
Weight	110Kg	130Kg	150Kg	160Kg
Noise	<55db			

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Hydrogen Generator

Palcan methanol reformers include steam reforming and membrane separating purification technology. The methanol reformers will produce purified hydrogen which can directly been used in PEMFC or other instruments where pure hydrogen is required.

Performance / Parameters：

Model	PalcanMF-100	PalcanMF-300	PalcanMF-500	PalcanMF-1300
Hydrogen output	12L/min	35L/min	65L/min	152L/min
Fuel cell power	1KW	3KW	5KW	13KW
Feedstock	20ml/min	50ml/min	105ml/min	220ml/min
Designed lifetime	6000h			
Weight	45kg	55kg	65kg	75kg
Dimensions /mm	430*430*660			
H2 purity	≥99.99%　CO<1ppm			
H2 output pressure	0.5bar			
Methanol/water blend ratio	Methanol 62-63wt.% with balance of DI water			
Methanol specifications	Methanol must meet or exceed IMPCA purity standard			
De-Ionized water specifications	DI water must meet ASTM Class Ⅱ purity standard, except that electrical resistance should be >8megOhm-cm at 25℃			
Start up time	From ambient temperature need 6-10hours From hot standby to 50% rated output is 100 seconds From hot standby to 100% rated output is 5 minutes			
Electrical power requirements	Hot STANDBY: 48VDC 9A RUN: 48VDC 2A			
Ambient Temp. Operating Range	-40℃～60℃			

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