



Solar Power Generators for Disaster Response:

? The Green Alternative



Briefing Objectives

- Company background
- Technical overview of solar power generator system
- Disaster response applications
- Equipment demonstrations



PO Box 102 Part
Republic, VA
24471 540-271-3403
info@sunrunr.com





PO Box 102 Port
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info@sunrunr.com

Company Overview



- Al Mattichak - inventor
- Incorporated 2004
- Patent awarded 2008
- VA DMBE Small Business
- Made in USA
- Subcontract NeuroRestorative veteran & civilian residents
- Green philosophy (i.e.. recycled shipping materials)
- Promote sustainability and energy education
- National Preparedness Month Coalition Member



SUNRNR Market



SUNRNR
P. Virginia
Solar Based
Portable
Power

PO Box 102 Part
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info@sunrunr.com

**Disaster
Response**



**Emergency
Preparedness**



Survivalists



**Cabin Owners,
Off Grid Sites**



3rd World. No Grid



Environmentalists



**Brown-out,
Backup**



Outdoor Events



Etc.



SUNRNR Features

- Expandable system
- Steel enclosure
- Portable
- Electrical protections
- High-load inverter
- Plug and play
- Minimal maintenance
- Long lifespan



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Expandable System



- **Power Module: Identical to main unit without inverter**
- **Daisy-chain as many power modules or main units as necessary**
- **Doubles, triples, ... stored capacity and generation capability**
- **“Microgrid”**

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System Specifications

Generation



Up to 300 W/hr



Storage



2000+ Whrs
12V DC AGM
(Li-Ion Option)



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System Specifications (cont)

Output



110 (or 220) V AC
at 3500 W, 7000 W surge
or 12V DC up to 30 amps



12V DC

Application



Medical
Refrigerator



Communication Post



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MADE IN THE USA

Bank Analogy



? W for ? hr = 2000 WWhr



<10 hrs,
2 panels



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FAQ #1: What will a SUNRNR run?

FAQ #2: For how long?

- **Watts = Volts x Amps**
- Voltage 110-120VAC (US), 220-240VAC (int'l)
- Amperage or Wattage on device spec sheet or data plate (**maximum**, i.e. 300 W fridge may average 50 W)
- Watts (and amps) often have **unspoken unit of time** associated with them (W, Whr, W/hr)





2000 Whr Examples

- 3500W (i.e. two 15-amp appliances like medium A/C and space heater) at full power for 35 minutes

OR

- One 1000W microwave on high for 2 hours

OR

- One 5W LED spotlight for 400 hours

While recharging, add ~10%



Example Application #1: Storm Clean-up



- 1000W (9 amp) power tool like an electric chain saw
 - 240 30-second cuts without recharging

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Example Application #2: Pandemic or Clean Water Crisis



- **Medical refrigerator, 8 amps**
 - Average 100 W for 20 hours (not charging)
- **Atmospheric water maker, 450 W**
 - 7 hours while charging
 - 1 liter/hr

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Example Application #3: SAR or Wide-Spread Natural Disaster



Repeater, Comm Station, Public Broadcast

- Laptop (60 W), Transmitter (100 W), Battery Charger (200 W, 2 hrs)
- 10 hours w/sun

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Example Application #4: Triage/Shelter



- 14-hour night: 140 W/hr
 - 10 LED lights throughout night = 420 W
 - Oxygen machine, 7 hrs = 1400 W

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Gas vs Solar Generator

Gas generator:

- Fuel pumps require electricity
- Dangers: storage, carbon monoxide, spark/fire/heat
- Advantages: time-of-day-independent
- Negatives: noise, emissions, heat
- Maintenance: oil changes, filters, refueling



Solar generator:

- Solar panels require sun
- Dangers: minimal
- Advantages: no noise, no emissions, no spark/fire/heat
- Negatives: weight, cost
- Maintenance: attention to battery status, panels





Gas vs Solar Generator (cont1)

	SUNRNR	Honda 3800 (industrial)
MSRP	1.8x	x
Weight	250 lb	185 lb
Noise @3300W	0 db	71 db
Run time per "tankful" @3300W	0.7 hr	10.4 hr
Run time per "tankful" @1650W	1.2 hr	15.6 hr
"Tankful"	8 hrs sun	6.6 gal gas

Breakeven cost @ 86 tankfuls





Gas vs Solar Generator (cont2)

	SUNRNR	Honda 2000 (recreational)
MSRP	3.3x	x
Weight	250 lb	46 lb
Noise @1600W	0 db	59 db
Run time per "tankful" @1600W	1.3 hr	4 hr
Run time per "tankful" @400W	5 hr	9.6 hr
"Tankful"	8 hrs sun	1.1 gal gas



On the Horizon

- Grid-Tie Option
- GSA Schedule
- Establish Service Centers





Briefing Conclusion / Outdoor Demonstration Introduction

- Thank you
- Questions?
- Contacts:
 - Scott French, scottf@sunrnr.com,
540-271-3403
 - Jenny French, jennyf@sunrnr.com,
540-271-2580

**Next: Demonstrations using green, alternative
energy to power equipment**

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