# Sol-Ark®

Energy Insurance for your family


## SOL-ARK 8K

***More Affordable:***
***5-15% less solar panels &***
***5-20% less batteries than others!***

## World's Most Efficient Battery Inverter

ees AWARD 2019 FINALIST

THE ENERGY AWARDS 18
Sol-Ark 8K: Renewable Energy Technology of 2018
FINALIST

S&P GLOBAL PLATTS
GLOBAL ENERGY AWARDS
2018 FINALIST

THE ENERGY AWARDS 18
Sol-Ark 8K: Home Energy Product of 2018
FINALIST

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# Sol-Ark® 8K Hybrid Solar Generator

Sol-Ark
Energy Insurance for your family

## Resilient

- EMP/Solar Flare/Lightning Hardened to 2X military levels (MIL-STD-461G)
- 4ms Instant Battery Backup

## Affordable

- Expandable PV: 1.5KW to 11KW
- Batteries: Optional, 12KWh to 48KWh
- Payback Period = 7.5 years

## Innovative

- Most Efficient Battery Based Solar Storage Inverter in the World
- Affordable Solar Storage
- Easiest All in One Install and User Interface
- Smart Load: automatic On/Off Grid

THE ENERGY AWARDS 18
Sol-Ark 8K: Renewable Energy Technology of 2018
FINALIST

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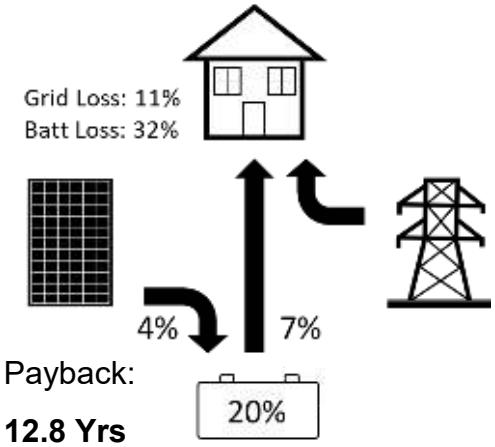
## Sustainable

- Lifespan: Panels = 50yrs
- Sol-Ark is a Solar Powered Generator made from Recyclable Materials
- Infinitely Recyclable Low Cost Batteries

## Efficient

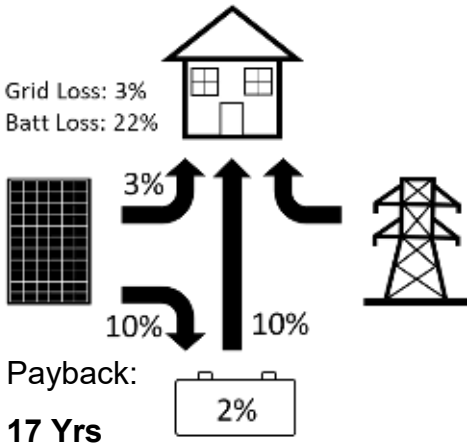
- Saves $4,000 on solar and $1,500 on batteries on average

**Traditional Solar**



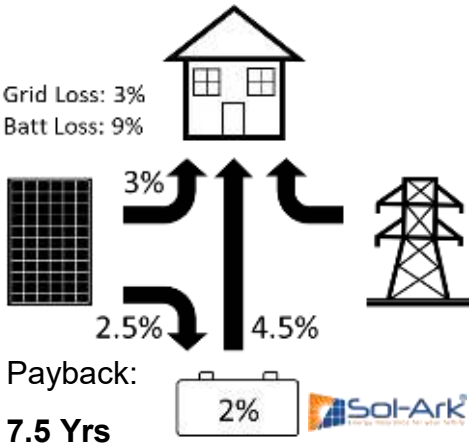

Payback:
**12.8 Yrs**

**Hybrid Solar**




Payback:
**17 Yrs**

**Sol-Ark Hybrid Solar**




Payback:
**7.5 Yrs**

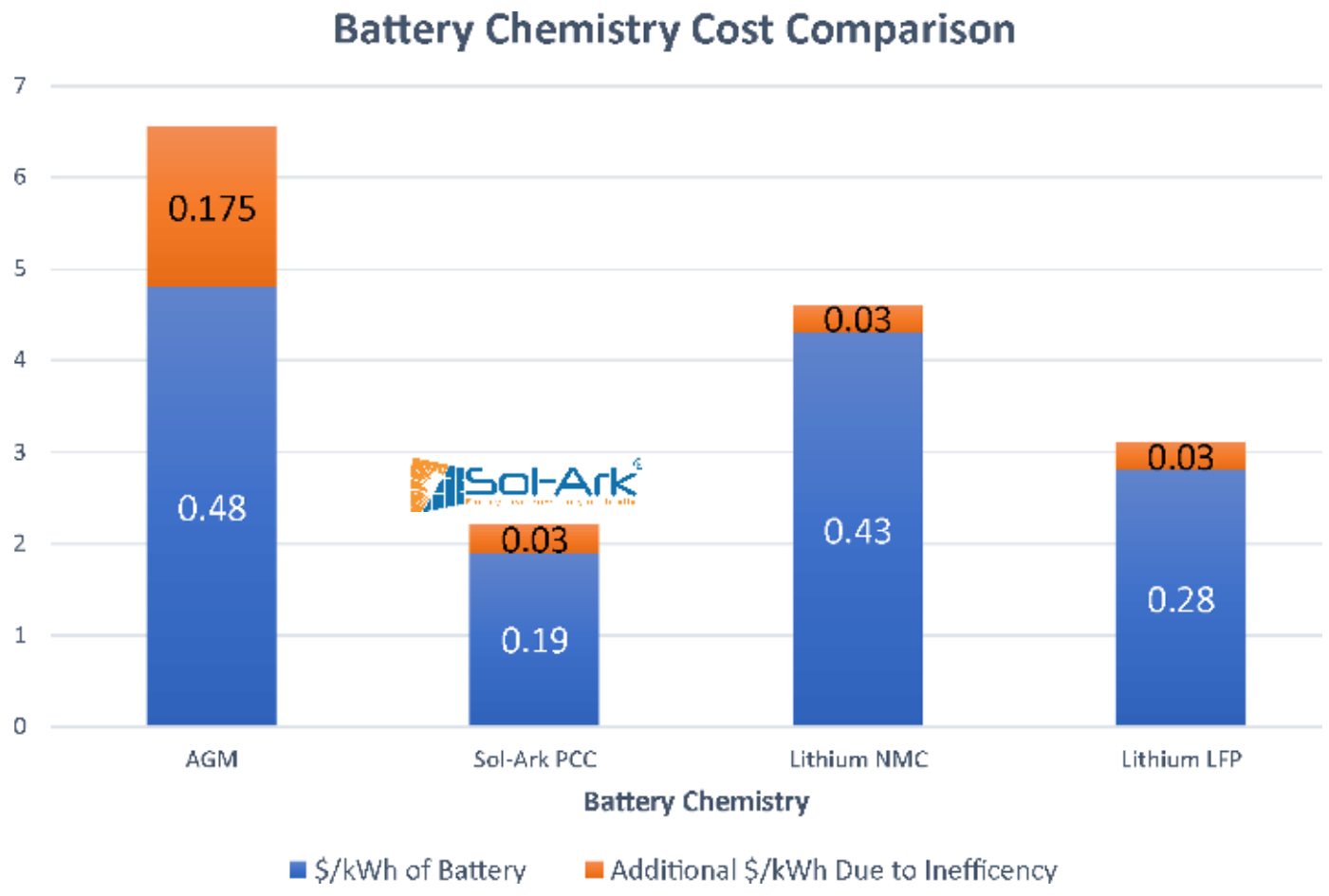
**Sales@sol-ark.com** **www.Sol-Ark.com** **972-575-8875**

# Solar Batteries made Affordable

| | Lead Acid (thick plate) | | | Lithium | | |
|---|---|---|---|---|---|---|
| | Wet | AGM | PCC AGM | LFP | LiOn / NMC | Li Polymer |
| Round Trip Efficiency | 80% | 88% | 98% | 98% | 98% | 98% |
| Round Trip Losses w/ Sol-Ark | 20% | 12% | 2% | 2% | 2% | 2% |
| 10KWh Cost (MSRP) | $1,600 | $1,800 | $2,100 | $8,500 | $6,500 | $4,500 |
| Off Grid Real World Cycles 50% DoD | 1300 | 750 | 2400 | 6000 | 3000 | 1500 |
| Off Grid Years @ 50% DoD | 3.6 | 2.1 | 6.6 | 16.4 | 8.2 | 4.1 |
| On Grid Years | 9 | 7 | 12 | 15 | 12 | 9 |
| Cost Per KWh Cycle | $0.25 | $0.48 | $0.18 | $0.28 | $0.43 | $0.60 |
| Cost of Oversizing 10KW PV @ $4/W | $8,000 | $4,800 | $800 | $800 | $800 | $800 |

Good for Emergency Backup

Good for Daily Cycling





**Sol-Ark's PCC-230 Battery: Partial Charge Carbon Sealed AGM**

- ◊ 11 kWh bank w/ 4 batteries 48V
- ◊ 3000 cycles @ 50% DOD (7+ years, 12 years On Grid)
- ◊ Excellent Partial State of Charge, 5 year warranty
- ◊ UL 1989
- ◊ 12.7" x 22" x 6.1" (320 x 559 x 154mm)
- ◊ 160 Lbs

# Battery Solar made Simple


Color Touch Display

On/Off Button

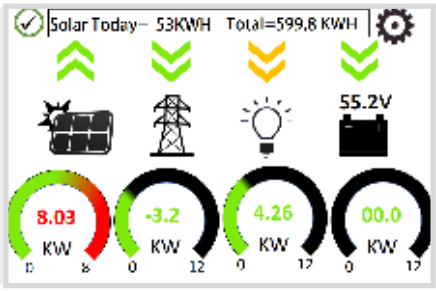
48V Battery

4 PV inputs

PV Shut-off

Wiring Knockouts & WiFi

Quiet Variable-speed Fans




**120/240V 50A Breakers**

- **AC In/Out: 9kW**
- **AC Load Out: 20kWpk**
- **AC Gen In/Smart Load Out**
- **Battery Temp sensor**
- **Auto-Generator Start**
- **PV Rapid Shut Down**
- **External current sensors**
- **Battery communication**

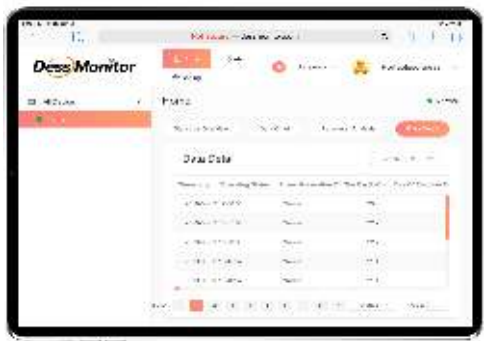
- **Grid Tied Mode:** Sell your power to the Grid
- **Meter Zero Mode:** Zero your whole home power
- **Time of Use:** Use batteries to avoid $$$$ power
- **120 / 240 / 208V**

- **Smart Load:** Programable Loads for high power off-grid items saves battery capacity
- **AC Coupling:** add backup to 7kW of existing Grid Tie installs
- **Peak Shaving:** Reduces peak demand charges

## EMP/CME/LIGHTNING PROTECTION

◊ Protect your system and appliances from EMP/Solar Flare/Lightning at 2X military requirements

## Wireless Monitoring & Remote Software updates



# Competitor Comparison

| Brand & Model | Sol-Ark 8K | Outback Skybox SBX5048 | Pika X7600 + 4xS2500 | SolarEdge 7600A + 32xP400 | Darfon 2xH5001 | Outback Radian FPR-8048A | Schneider XWPro6.8 + 2xMPPT80 | Sonnen ECO-16 + String Inv | Magnum 2x4448PAE +16xGT500 | Tesla 2x Powerwall2 + String Inv |
|---|---|---|---|---|---|---|---|---|---|---|
| MSRP Price | $6,500 | $6,500 | $6,500 | $5,500 | $6,500 | $9,000 | $8,700 | $28,500 | $12,000 | $29,000 |
| Inverter Continous Power | 9KW (8KW) | 5KW | 7.6KW | 7.6KW (Batt=5KW) | 2x5.5KW | 8KW | 6.8KW | 8KW | 2x4KW | 2x5KW |
| Off Grid Inverter Power peak (5s) | 20KW | 5KW | 12KW | 6.6KW | 13KW | 12KW | 12KW | 12KW | 17KW | 14KW |
| System Idle Power | 60W | 140W | | | 200W | 76W | 48W | 60W | 58W | 78W |
| AC to DC Charger | 185A | 100A | 6.7KW | 5KW | 120A | 115A | 140A | 115A | 120A | N/A |
| User Interface | color touch | color touch | Text | Text | Text | Text | Text | color touch | Text | X |
| PV to Batt Efficiency @ 65% | 97.5% | 81.0% | 92.0% | 91.0% | 91.0% | 97.5% | 96.0% | 82.0% | 80.5% | 92.5% |
| AC to Batt Efficiency @ 65% | 96.0% | 80.0% | 93.0% | 91.0% | 90.0% | 85.0% | 91.5% | 85.0% | 85.0% | 95.0% |
| Batt to AC Efficiency @ 65% | 95.5% | 94.5% | 93.0% | 88.0% | 90.0% | 93.0% | 92.5% | 93.0% | 91.0% | 95.0% |
| | | | | | | | | | | |
| On Grid PV to AC Efficiency @ 65% | 96.5% | 94.0% | 95.5% | 96.5% | 95.5% | 90.2% | 88.5% | 97.0% | 95.5% | 97.0% |
| | | | | | | | | | | |
| Off Grid or Time of Use PV -> Batt -> AC *Losses* @ 65% | 7% | 24% | 15% | 21% | 19% | 10% | 12% | 25% | 30% | 13% |
| Battery Bank | optional 24KWh +$5K | 26KWh +$7.2K | 380V 20.3KWh +$15K | 380V 9.8KWh +$7K | optional 20KWh +$11K | 26KWh +$7.2K | 26KWh +$7.2K | included 16KWh LFP | 26KWh +$7.2K | included 26.4KWh |
| UPS Grid Failure Transfer Time | 4ms | 20ms | 1000ms | 2000ms | 20ms | 8ms | 8ms | 100ms | 16ms | 2000ms |
| EMP/Solar Flare Hardened to >100KV/m | optional +$1.2K | X | X | X | X | X | X | X | X | X |
| Low Cost Easy Install | ✓ | ✓ | X | X | ✓ | X | X | X | X | X |
| Warranty electronics | 5/10 yr | 5/10 yr | 10 yr | 12/20/25 yr | 5/10 yr | 5/10 yr | 5 yr | 10 yr | 5 yr / 25yr | 10 yr |
| NEC UL1699B Arc Fault | ✓ | ✓ | ✓ | ✓ | X | ✓ | X | ✓ | ✓ | ✓ |
| AC Coupling to Micro/String Inverters | ✓ | X | X | ✓ | X | ✓ | ✓ | ✓ | ✓ | ✓ |
| Parallel Stacking | X | ✓ | X | X | ✓ | ✓ | ✓ | X | ✓ | ✓ |
| UL1741SA/Rule 21 & 14H (Grid Sell only) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | X | X |

# Sol-Ark-8K-48-ST Specifications

## Solar

| | |
|---|---|
| Max allowed PV Power | 11000W |
| Max allowed PV Power per MPPT | 6000W |
| Max DC voltage | 500V |
| MPPT voltage range | 150-425V |
| Starting voltage | 175V |
| Number of MPPT | 2 |
| Solar Strings per MPPT | 2 |
| Max DC current per MPPT | 18A (self limiting) |
| Max AC Coupled Input (Micro/String Inverters) | 7,000W |
| Max Combined Solar Input (DC+AC) | 13,000W |

## AC Output

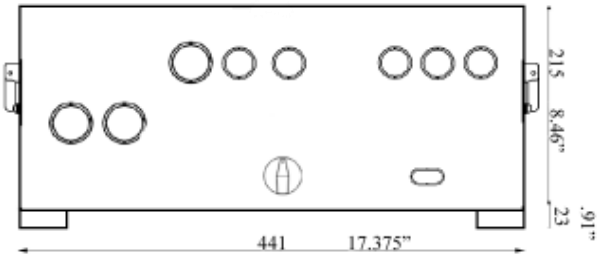
| | |
|---|---|
| Connections | 120/240V split phase |
| Continuous AC power on Solar or Battery | 9000W 37.5A L-L (240V)<br>4800W 40A L-N (120V) |
| Surge AC power 5sec | 20,000VA L-L (240V)<br>10,000VA L-N (120V) |
| Frequency | 60/50Hz |
| Continuous AC power with Grid or Generator | 12000W 50A L-L (240V)<br>6000W 50A L-N (120V) |
| CEC Efficiency | 96.5% (Peak 97.5%) |
| Idle Consumption typical – no load | 60W |
| Sell back power modes | Limited to Household or<br>Full Grid-Tied |
| Design (DC to AC) | Transformerless DC |
| Response Time (Grid-Tied to Off-Grid) | 4ms |
| Power Factor | +-0.9 - 1.0 |

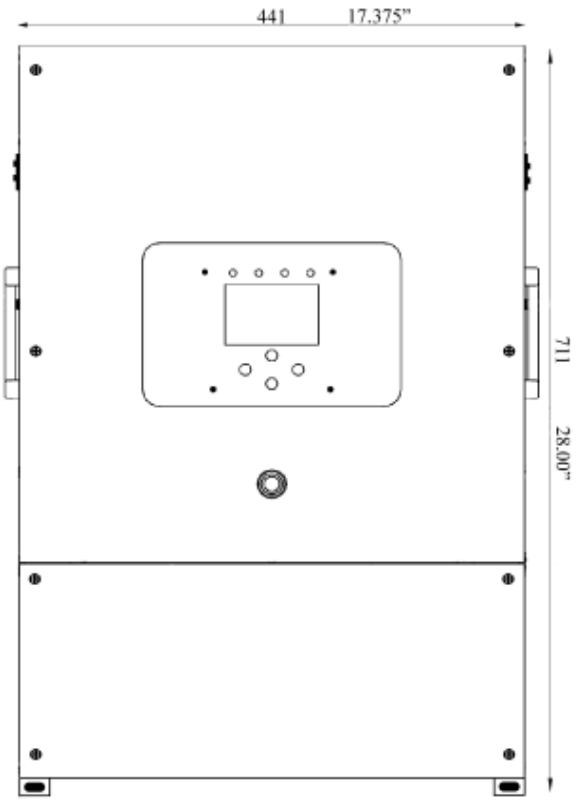
## Battery (optional)

| | |
|---|---|
| Type | Lead-Acid or Li-Ion |
| Nominal DC Input | 48V |
| Capacity | 90 – 2000Ah |
| Voltage Range | 41.0 – 59.0V |
| Continuous Battery charging output | 190A |
| Charging curve | 3-stage w/ equalization |
| Grid to Battery Charging Efficiency | 96.0% |
| External temperature sensor | included |
| Current shunt for accurate % SOC | integrated |
| External Generator Start based on voltage or % SOC | integrated |
| Communication to Lithium battery | CanBus & RS485 |

## General

| | |
|---|---|
| Dimensions (H x W x D) | 28.0” x 17.375” x 9.37” |
| Weight | 75 lbs |
| Enclosure | NEMA type 1 (Indoor Use) |
| Ambient Temperature (4 variable speed fans) | -25 to 55C, >45C derating |
| Display | Color touch screen |
| Wi-Fi Communication (monitoring or SW updates) | integrated |
| Snap on sensors for limited selling to Household | included |
| Standard Warranty | 5 years |
| Optional Extended Warranty | 10 years |




## Protection & Certifications

| | |
|---|---|
| Electronics certified safety by SGS labs to NEC & UL specs – NEC 690.4B & NEC 705.4/6 | Yes |
| Grid Sell Back – UL1741-2010/2018, IEEE1547a-2003/2014, FCC 15 class B, (April 2019: UL1741SA, CA Rule 21, HECO Rule 14H) | Yes |
| PV DC disconnect switch – NEC 240.15 | integrated |
| Ground Fault Detection – NEC 690.5 | integrated |
| PV rapid shutdown control – NEC 690.12 | integrated |
| PV Arc Fault detection – NEC 690.11/ UL1699B | integrated |
| PV input lightning protection | integrated |
| AC input/output 50A breakers | integrated |
| Battery overcurrent fuse | integrated |
| User wiring enclosure w/ ¾” & 1” knock-outs | integrated |
| Solar Flare/EMP Hardened to 2015 MIL-STD-461G (Independently tested June 2018) | optional |