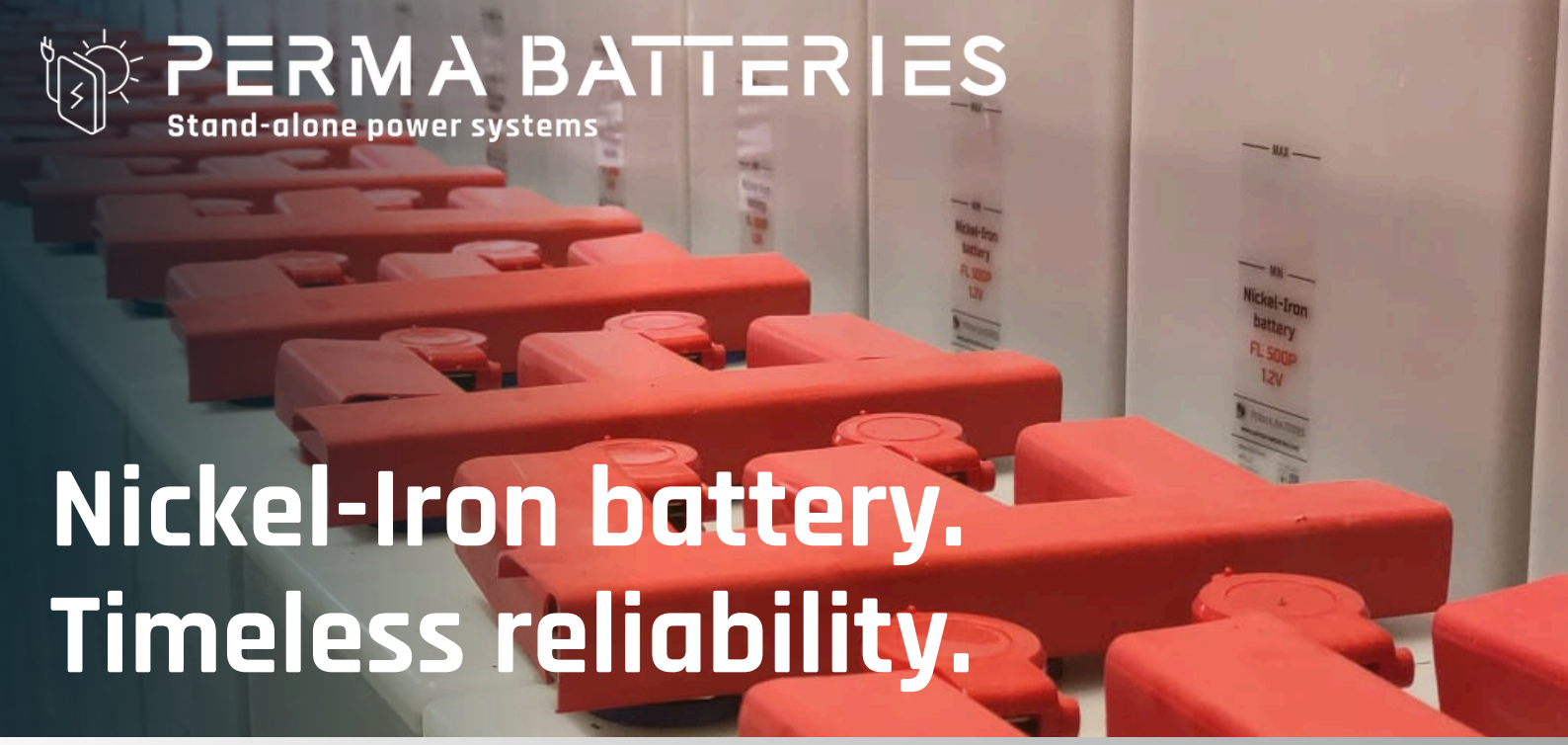
PERMA BATTERIES
Stand-alone power systems



Nickel-Iron battery. Timeless reliability.

We bring back the original Edison battery.

Unmatched in robustness and longevity since their invention in 1901 by Thomas Edison and W. Jungner, NiFe batteries fell out of favor in the 1970s, overtaken by the more affordable lead-acid batteries, and later by lithium-ion in the 1990s. The exceptional longevity of Nickel-Iron batteries is explained by their chemical properties.

The structural degradation of the components (iron electrode and nickel electrode) is virtually non-existent, thanks to an alkaline electrolyte that acts as a preservative for the metals, much like in Nickel-Cadmium batteries (as opposed to acidic batteries).

Perfect for off-grid systems

Build 12/24/48V systems with modular 1.2 cells.

Cold-ready

Wide operating temperature range.

Field-serviceable

Performance can be renewed via electrolyte change.



Industrial-quality batteries.

- Ideal for off-grid systems
- Modular 1.2v cells, build 12/24/48V
- EMP-resilient : no BMS.
- Abuse-tolerant
- Field-serviceable.
- Decades of services.

MADE IN EUROPE

+1 (415) 818-0845
www.perma-batteries-usa.com
www.youtube.com/@perma-batteries

PERMA BATTERIES

Stand-alone power systems



Customized NiFe battery systems to your needs.

Century-proven Nickel-Iron chemistry.

The average lifespan of a Nickel-Iron battery is over 20 years under normal use, with the added benefit that its electrolyte can be replaced to rejuvenate its performance. Nickel-Iron batteries have over a century of proven performance, and their behavior in the field has been extensively studied and documented in specialized literature.

Ultra-durable

Nickel-Iron electrodes are not altered during charge/discharge processes.

Fail-safe design

Doesn't rely on BMS or any electronics.

EMP-Resilient

Keeps working when electronically regulated batteries won't.



Compatible inverters/chargers :

- Inverter-agnostic batteries
- Voltage working range : 40-64VCC
- Can power both single and three-phase inverters.
- Can be recharged by 3rd party PV inverters
- Works with AC/DC coupled systems.

MidNite Solar, Inc

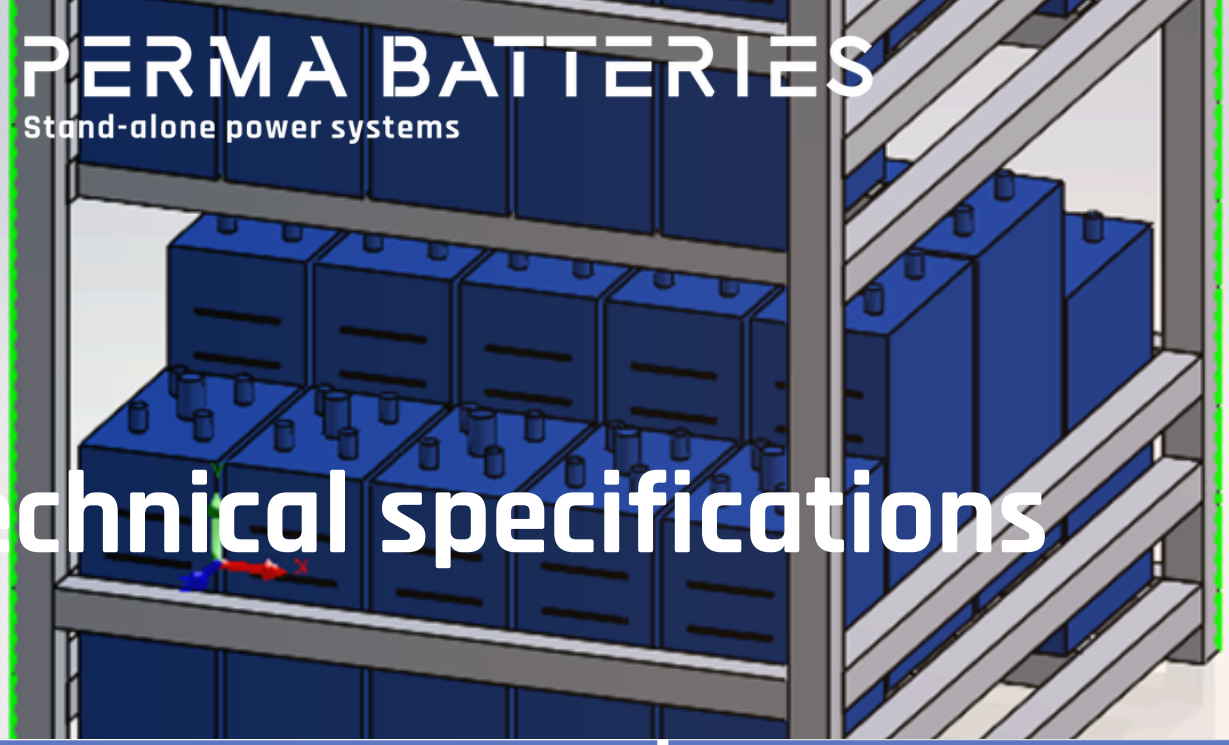
Sol-Ark LIMITLESS POWER

victron energy BLUE POWER

OutBack POWER

+1 (415) 818-0845 www.perma-batteries-usa.com www.youtube.com/@perma-batteries

PERMA BATTERIES
Stand-alone power systems



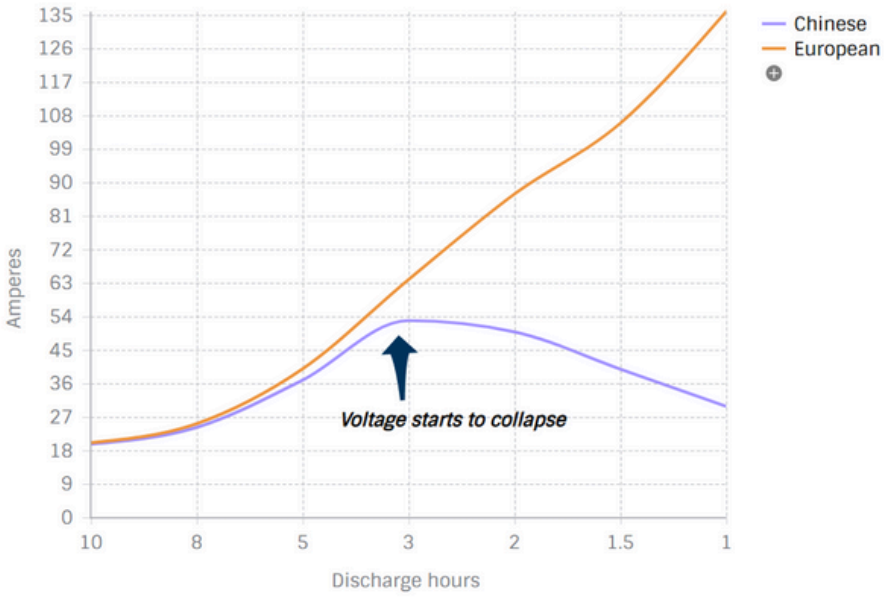
Technical specifications

GENERAL FEATURES	
Battery type	Flooded, Alcaline
Redox couple	NiOOH / FeOH
Open circuit voltage (OCV)	1.45V
Electrolyte (1.21g/cm3)	KOH (25%) + LiOH (3%)
Nominal voltage (EMF)	~ 1.2V
Self-discharge rate	~ 10% par mois (20°)
Maintenance interval	~ 3 mois

ENVIRONMENTAL	
Optimal discharge temperature	50 F° à + 80°
Optimal charging temperature	50 F° à + 80°
Storage temperature	-4 F° à + 86°
Maximum humidity	5 to 95%, non condensing
Temperature compensation	-3mV/C°
Recommended DoD ("depth of disdcharge")	30%- 60%
Maximum DoD	up to 100%
OCV Voltage @ 0% SOC	0.9v per cell

PERFORMANCES	
Global yield	~ de 70 à 80%
Peukert factor	~ 1.12
80% DoD cycle life (20°, EOL 70%)	> 3000
40% DoD cycle life (20°, EOL 70%)	> 7000
20% DoD cycle life (20°, EOL 70%)	> 12 000
Calendar life ("shelf life")	> 25 ans
Specific energy	30 Wh /Kg

OPERATIONAL PARAMETERS	
Charging type	courant-constant (CC)
Absorption voltage	~ 1.60V - 1.70V
Open-circuit voltage (@100% SOC)	~ 1.40V
Optimal charging current	C/5 (15-20A / 100Ah)
Minimum charging current	C/15
Maximum charging current	1C (electrolyte < 85 F°)
Optimal discharging current	C/10
Maximum discharging current	1C (electrolyte < 85°)



Linear discharge curves :

Compared to chinese-manufactured cells, our Edison batteries supports faster discharge rates, up to 1C burst, allowing for more linear discharge voltages.

+1 (415) 818-0845 www.perma-batteries-usa.com www.youtube.com/@perma-batteries