firefly international energy

OASIS™

POWERING THE FUTURE

OASIS MCF Heavy Duty

(VRLA AGM GEL) BATTERY

Developed by scientists at Firefly Energy, Microcell Carbon Foam is a material that's revolutionizing the battery industry. Compared to lead plates, one of the main components of all lead acid batteries, carbon foam delivers longer service life, increased energy efficiency and better performance under extreme conditions. That's why we used it to create our revolutionary Firefly MCF battery.

Firefly carbon foam design resists sulfation and corrosion (two of the primary causes of failure in lead acid batteries), while dramatically increasing the surface area within the battery, resulting in greater energy capacity, faster recharges, and deeper discharge capability.

SALIENT FEATURES

- Sealed maintenance free
- More than 3-4 times cycle life compared to flooded gel & AGM VRLA batteries at 50% DOD
- Lower cost per kWh delivered compared to premium VRLA batteries
- Unmatched ability to recover from extended storage in discharged state
- Throughput efficiency greater than 90%
- Improved high/low temperature performance
- Superior protection against corrosion and sulfation related problems
- Lowest Cost of ownership and Industry leading warranty
- Compatible with existing lead acid battery recycling infrastructure
- Outstanding long life even under partial state of charge operation

Firefly Batteries deliver high capacity 2V or 4V reserve power and deep cycle performance.

Firefly Oasis MCF Heavy Duty Batteries are ideal for applications such as renewable energy, telecom backup, oil and gas, energy storage, railway, emergency lighting and switchgear.

- High capacity
- Maintenance free - no need to refill water
- Operating temperature range: -20°C to +55°C (-4°F to 131°F)
- Shelf life of up to 24 months
- Design life 15+ years at 20°C (68°F)
- Extra long life
- Fast recharging
- State-of-the-art automated manufacturing ensures consistency and reliability
- Advanced 3 stage terminal design to ensure leak-free operation - brass terminals provide maximum performance
- High modulus Polyphenylene Oxide (PPO) plastic materials designed to withstand extended elevated operating temperatures and maintain high battery compression essential for reliable operation

2V 900 Ah / 4V 450 Ah

(VRLA AGM GEL) BATTERY

OASIS™

	2 V 900 Ah	4V 450 Ah
Partial state of charge cycling Efficiency	Ampere-hour >97% & Watt-hour> 90 %	
Nominal Voltage	2V	4V
Maximum charge voltage	2.40V	4.80V
Maximum charge current	Up to 1C	
Internal Resistance	< 0.6 mΩ	< 1.2 mΩ
Shelf life@25°C(77°F)	2 years	
Self- Discharge	< 3% per month	

Temperature	Low	High
Operation	-20°C/-4°F	50°C/122°F
storage	-30°C/-22°F	60°C/140°F

Weights & Dimensions	
Length	10.15 in/258mm
Width	6.85 in /174 mm
Height	17.2 in/438 mm
Weight	94 lbs / 42.6 kgs
Volume	1200 Cu.in/19.7 liters
Construction	
Terminal configuration	3/8 “-16 UNC
Case/Cover	PPCP
Racks	Available upon request along with BEMS

Discharge Rates to 1.75 VPC *

	2v 900 Ah		4V 450 Ah		
Hours	Amps	Ah	Amps	Ah	Kwh
8	93.7	750	46.9	375	1.50
10	80.0	800	40.0	400	1.60
20	45.0	900	22.5	450	1.80
24	38.3	920	19.2	460	1.84
100	9.6	960	4.8	480	1.92

Battery Life *

DOD(%)	Cycles
30	13500-16500
50	4650-5200
65	2400-3000
80	1300-1650
100	800-1000

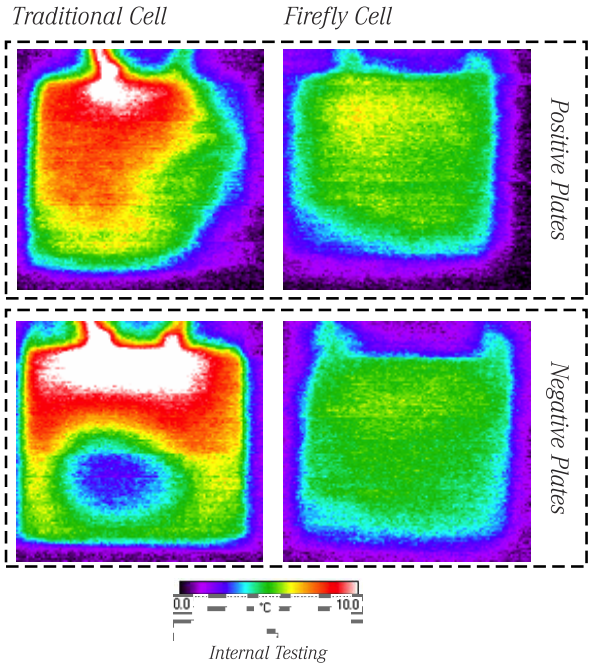
* All above are at 25°C/77°F

International Compliance

· IS 15549:2005
· ISO 9001:2008

Charge Temperature Compensation

Operating Temperature	°C	-20	-5	10	25	40	50
	°F	-4	23	50	77	104	131
Absorption Charge Voltage(V)	2V 900 Ah	2.6	2.5	2.45	2.4	2.35	2.33
	4V 450 Ah	5.2	5	4.9	4.8	4.7	4.66



Internal Testing

Infrared thermal images snapped at the end of a 5C (12 minute) discharge of both a Firefly 3D cell and a Traditional cell.

More uniform temperature distribution, as the Carbon Foam is thermally conductive, results in

- Uniform current density distribution.
- Higher overall active material utilization.
- Less localized positive grid corrosion.
- Less localized positive active material wear out.

CONNECT WITH US

www.fireflyenergy.com
sales@fireflyenergy.com
info@fireflyenergy.com

Firefly Energy Co

8310, N. University Street,
Peoria, IL 61615

firefly® international energy