firefly energy

THE POWER OF CARBON FOAM





Powering The Future

Developed by scientists at Firely 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 Firely MCF battery.

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

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Marine



Built for Marine Economics
Fleet operators measure performance by total cost of ownership. Firefly batteries help reduce operational costs through:

Longer Battery Life
Up to three times longer cycle life, reducing replacement frequency.

Less Downtime
Designed to tolerate repeated deep discharge without permanent damage.

Faster Charging
Recharge quickly while it is driving.

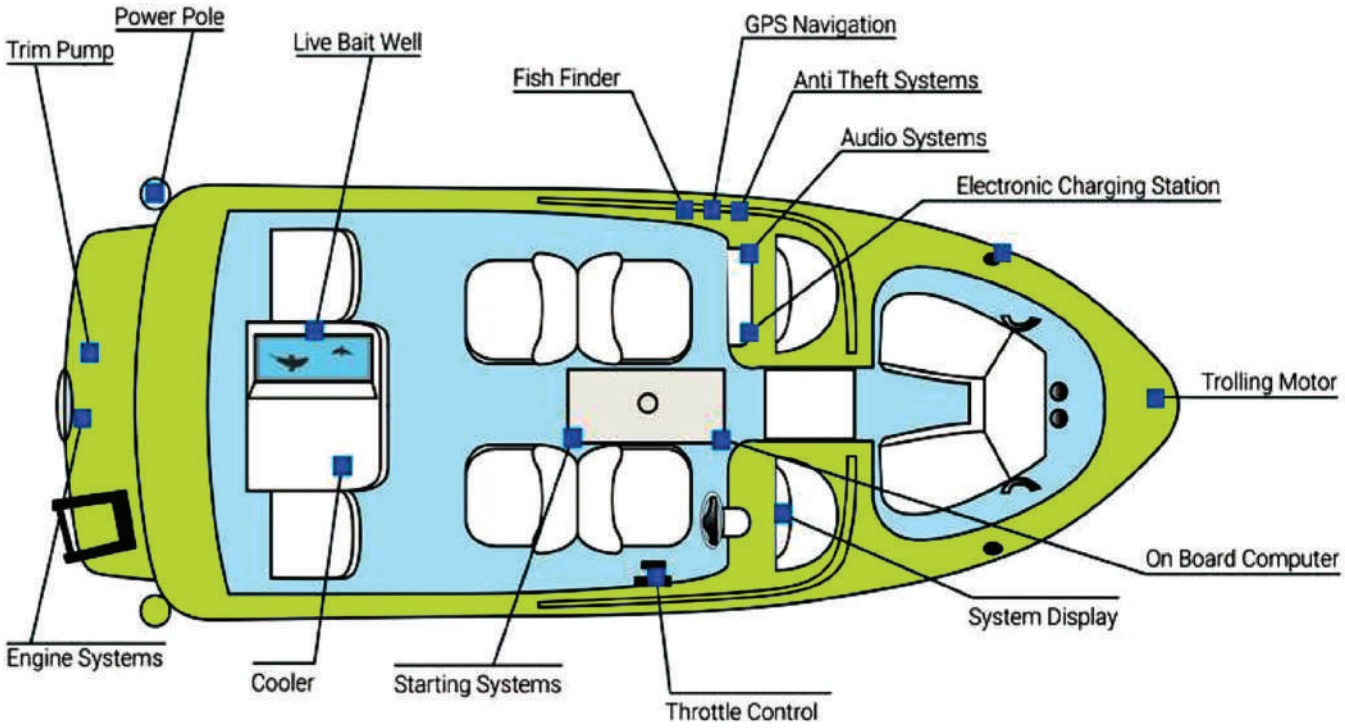
Maintenance-Free Operation
Sealed VRLA AGM design requires no watering or maintenance.

Environmentally Responsible
Fully recyclable within existing lead-acid recycling infrastructure.

FIREFLY VS CONVENTIONAL BATTERIES

Feature	Traditional AGM	Lithium	Firefly Carbon Foam
Deep Cycle Capability	Limited	Excellent	Excellent
Cost	Low	Very High	Moderate
Performance in Heat & Cold	Moderate	Limited	Excellent
Recharge Speed	Moderate	Fast	Fast
Recyclability	Yes	Limited	Yes

OASIS™



Selecting the wrong type of battery will cause disappointing performance, shortened lifetime and wasted money.

Most flooded starting and traditional AGM batteries are best suited for intermittent use and not deep-cycle applications.

FIREFLY OASIS batteries are the pinnacle of AGM battery technology. FIREFLY micro carbon foam batteries are built to provide years of worry-free and maintenance-free operation.

12V G31M BATTERY

(VRLA AGM GEL)

OASIS™

Partial state of charge cycling Efficiency	Ampere-hour >97% & watt hour >90%
Nominal Voltage	12V
Maximum charge voltage	14.10V
Maximum charge current	0.5C Amps for continuous charge
	1C Amps can be tolerated for Sporadic sessions.
Internal resistance	5.0 mΩ
Shelf life@25°C(77°F)	2 years
Self- Discharge	<2% per Month
CCA	630 Amps

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

Weights & Dimensions	
Length	14.0in/356mm
Width	6.73in/171mm
Height	8.6in/218 mm
Weight	69.5lbs/31.5kgs
Volume	813Cu.in/13.0liters
	Construction
Terminal configuration	3/8 "-16 UNC
Case/Cover	ABS
Racks	Available upon request

*Discharge Rates to 1.75V Per Cell**

Hours	Amps	Ah	Kwh
0.25	155	38.8	0.47
1	63	63	0.76
3	26.7	80	0.96
5	17.4	87	1.04
10	10	100	1.20
20	5.25	105	1.26

*Battery Life**

DOD(%)	Cycles
30	7500-11250
50	3000-3500
65	1500-2000
80	850-1100
100	500-700

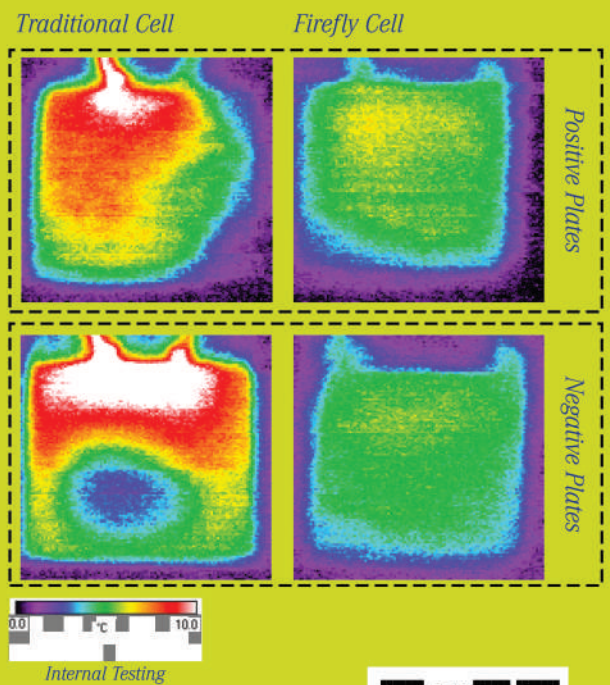
*All above are at 25°C/77°F

International Compliance

- IEC 60896-21/22:2004
- IEC 61427
- IEC 60095
- IS 15549:2005
- IEC 61056
- ISO 9001:2015

Charge Temperature Compensation

Operating Temperature	°C	-20	25	40	55
	°F	-4	77	104	131
Absorption Charge Voltage	V	15.3	14.1	13.8	13.5



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.

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