

MarineGel

sealed marine batteries

Unbeatable performance, unspillable energy

The world's leading sealed battery

MarineGel Sealed Marine Batteries

Unbeatable performance, unspillable energy



World leading gel technology developed and **manufactured in Australia** by Battery Energy in conjunction with the **CSIRO'S WORLD RENOWNED NOVEL BATTERY GROUP**.

MarineGel combines the traditional resilience and long life of vented cells with the installation and maintenance benefits of sealed batteries.

Better than other gel batteries:

- The MarineGel incorporates the world's best post seal system to avoid leakage
- Explosion proof and flame resistant
- Approved for transport as "non dangerous" goods
- Twice the energy life of its nearest foreign competitor
- Easy charging characteristics
- Very low self-discharge

The best warranty in the business

Batteries ain't Batteries

Ever wondered why lead acid batteries don't seem to last in your boat and always fail when you need them the most? Remember the time when cars had generators and the batteries only lasted 2 years at most? Why after 150 years of lead acid battery development it appears you can't buy a decent long life battery these days.

Well the answer to all these questions is simply all Batteries ain't Batteries!

In fact there are many different types of Lead Acid Batteries; Starter Batteries, Standby Batteries, Traction Batteries, Remote Area Power Supply Batteries, Load Levelling Batteries, Electric Vehicle Batteries and Solar Batteries to name just a few, and they are used in emergency lighting, telecommunications, Un-interruptible Power Supplies (UPS), Navigational Beacons in fact in applications where the reliability and long life of the battery are high priority features.

Lead Acid Battery technology has undergone major changes over the past 20 years resulting in high quality long life batteries tailored to specific applications.

In fact that is the culprit in most instances why the batteries you use in your boat fail prematurely; **YOU ARE USING THE WRONG BATTERY!** A battery that has been developed to meet a specific application will not perform well when used in a different application. Makes sense?

In most Boating situations you probably have at least two different applications as different as chalk and cheese. Namely batteries designed to start a motor (high discharge current for a couple of seconds) are not designed for the long slow discharge requirements of Marine Batteries (House Batteries). Remember that these days Marine Batteries are used more and more for Navigation Equipment, Entertainment equipment, lighting, refrigeration, autopilot etc. No longer are batteries just for lights!

Lets explore the physical Chemistry of this as to understand is to know and to know is to make the right decision.

For simplicity sake lets compare a starter battery load profile with that of a marine battery.



| Issue | Starter Battery | Marine Battery |
|--|-----------------------|-------------------------|
| Discharge Current | >300A | +/- 10A |
| Discharge Time | 10-30 seconds | +/- 5 hours |
| Recharge | Immediately (seconds) | After some time (hours) |
| Depth of Discharge per (starter) cycle before recharge | Around 1% | Maybe as high as 50% |

It is obvious that there is at least an order of magnitude difference in the requirements between these two applications.

In the case of a lead acid battery the current (electrons) comes from an electrochemical reaction between the Acid (electrolyte, H_2SO_4) and the Positive Plate (PbO_2 , Lead Oxide) and the Negative Plate (Pb, pure lead). The electrons are emitted by the electrochemical reaction.

Is there hope for Boaties!

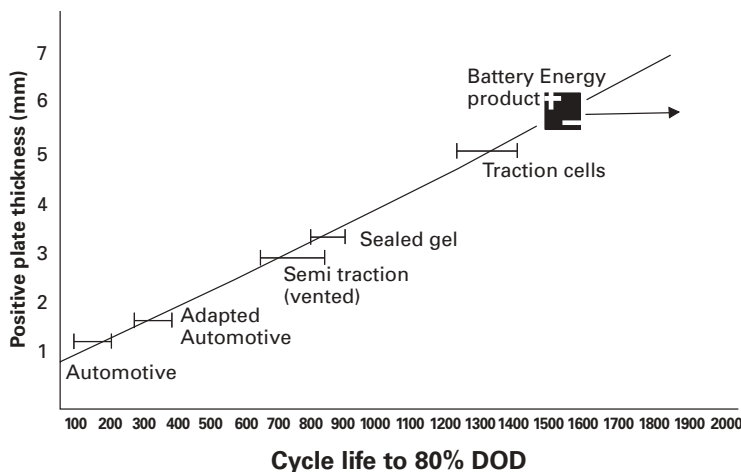
To tell you the truth!.....Yes, and its Australian Technology. Developed by Battery Energy Power Solutions in conjunction with the Novel Battery Group of the CSIRO.

The CSIRO is recognised internationally as the world leading expert on lead acid batteries. They have been testing every type and make of battery for many years and understand the major failure modes. They have designed batteries for every conceivable application and for major corporations such Pacific Gas and Electric (USA, Utility for load levelling) and General Motors (USA, electric Vehicles) as well as for a number of major overseas battery companies, such as Hawker and GNB.



Battery Energy is a specialist industrial battery manufacturer, Australian owned and operated and based in Sydney. Working with the CSIRO they developed a unique battery in 1992 and launched it onto the industrial market in 1997. Needless to say that the CSIRO has tested this unique battery exhaustively and Battery Energy and the CSIRO are able to back every claim they make.

Positive plate thickness compared to cycle life



OK, what is this battery?

MARINEGEL is a range of Sealed Gel Batteries suitable for marine applications as a starter and or house battery.

It is unique in that:

- As a Gel battery it has been designed to be charged by standard battery charging regimes as found in most marine and automotive applications (alternator on diesel etc) unlike other sealed batteries that require specialised charging regimes
- The gel overcomes the problems of stratification and sulphation as the electrolyte is trapped by the gel and cannot stratify – a problem with other types of sealed batteries such as Absorbed Glass Matt (AGM)
- It is much less prone to thermal runaway (having been tested extensively at elevated temperatures between 40 and 60 degrees), than other gel batteries. AGM batteries have an even greater problem in this respect
- It has an extremely long cycle life more than 1,200 cycles to 100% depth of discharge (more than 5,000 cycles at 25% depth of discharge @ 25 degrees C) this means more than 10 years real operational life in practice
- Under float application it has a design life of > 20 years
- As a sealed battery it can be installed on its side, is acid spill proof, fire and explosion proof and requires no special ventilation. This alone differentiates it from virtually every other battery in the market. Unlike flooded batteries, it can be transported as non hazardous cargo
- At end of life it is totally recyclable
- It is much more tolerant to overcharging than other sealed batteries
- It has a low self discharge rate
- It is the most efficient Gel Battery in the world in that it requires only 102% energy recharge to reach 100% state of charge
- From independent tests in America the MarineGel battery has been shown to be twice as cost effective as its nearest battery competitor (US\$/Ah-cycles)
- It can be recharged back to 100% capacity very quickly
- It can provide High Cranking currents suitable for starting diesels, although it is not as good as thin plate AGM or car battery types

With this information I trust you will be able to make an informed decision as to what is the correct type of battery to install on your boat to ensure safety, reliability and the security of battery availability under all extreme conditions. Remember Batteries Ain't Batteries.

Dr David Brown

Dr Bruce Robins

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MarineGel

The World's leading Marine Battery by energy beyond petroleum

| Battery Description | Voltage | Capacities @25C° (+/- 10%) | | Wt Kg | Dimensions | | |
|---------------------|---------|----------------------------|------------|----------|------------|---------|---------|
| | | C20 Ah | Cranking A | | L mm | W mm | H mm |
| | | 6MG130 | 6V | 130Ah | 780A | 28kg | 276 |
| 6MG200 | 6V | 200Ah | 1250A | 38kg | 276 | 184 | 265 |
| 2MG250 | 2V | 250Ah | 1500A | 15kg | 109 | 184 | 265 |
| 4MG310 | 4V | 310Ah | 2000A | 38kg | 276 | 184 | 265 |
| 2MG450 | 2V | 450Ah | 2600A | 26kg | 184 | 197 | 265 |
| 2MG500 | 2V | 500Ah | 3000A | 33kg | 184 | 276 | 265 |
| 2MG650 | 2V | 650Ah | 4000A | 40kg | 184 | 276 | 265 |
| 2MG1000 | 2V | 1000Ah | 3500A | 58kg | 145 | 296 | 680 |
| 2MG1350 | 2V | 1350Ah | 4700A | 76kg | 210 | 191 | 680 |
| 2MG2000 | 2V | 2000Ah | 7000A | 107kg | 210 | 275 | 680 |



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