

# Genuine Gel™ Batteries Make a Difference for Renewable Energy Off-Grid Users

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There are very specific categories of lead battery technology which are determined by strict international standards. Over the past few years, products that do not meet these standards have been introduced into the marketplace. This is resulting in confusion relating to the established performance expectations of genuine Gel battery technology. Users that depend on these batteries to power their renewable energy off-grid equipment have become accustomed to a certain level of quality, cycle life, reliability and performance are now having to compromise, perhaps unknowingly.

## WHAT IS A GENUINE GEL™ BATTERY?

A genuine Gel battery is a Valve Regulated Lead-Acid (VRLA) battery, regulated by special, one-way pressure-relief valves. The electrolyte in a genuine Gel battery is locked in a highly viscous gelled state instead of the traditional liquid form. Because there is no liquid-type electrolyte, it is designed not to leak out of the battery if tipped on its side. Genuine Gel battery designs have a superior deep discharge resiliency and can deliver over two to three times the cycle life of an AGM product in off-grid renewable energy applications.

There are many international standards that apply to how a Gel battery is

defined. There is, however, one common theme: **the electrolyte must be immobilized by a gelling agent** (see *standards and definitions below*).

## WHAT IS AN AGM BATTERY?

An AGM (Absorbed Glass Mat) battery is a Valve Regulated Lead-Acid battery, regulated by special, one-way pressure-relief valves. The electrolyte in AGM batteries is completely absorbed in separators consisting of matted glass fibers. This causes them to be spill-proof, meaning they are designed not to leak like a flooded design if tipped on their side. The glass mats in AGM batteries are wrapped around the positive plate, which

helps prevent damage from vibration and extends cycling. The battery's groups are packed tightly in the case partitions, also protecting its power producing components. AGM battery designs can have over twice the cycle life of a conventional flooded product in the right application, but significantly shorter cycle life than genuine Gel batteries in off-grid renewable energy applications.

## WHAT IS A “HYBRID” GEL BATTERY?

There is no standardization or qualification for what are being called “Hybrid” Gel batteries. “Hybrid” Gel is a marketing term for battery products that have recently entered the marketplace

### **Gel Battery Definitions**

- *BCI Definition: GEL* – Electrolyte that has been immobilized by the addition of a chemical agent, normally fine silica, to prevent spillage. Batteries made with gelled electrolyte are often referred to as Gel batteries.
- *ANSI T1.330-1997- Valve-Regulated Lead-Acid Batteries Used in the Telecommunications Environment: GELLED ELECTROLYTE* – electrolyte that has been immobilized by the addition of a gelling agent.
- *YD/T 1360-2005–Valve Regulated Gel Battery for Telecommunication: VALVE-REGULATED GEL BATTERY* – the battery adopts gelatinous electrolyte and remains airtight and liquid sealing conditions when normally operated...
- *IEEE 1189- Guide for Selection of VRLA batteries for Stationary Applications: GELLED ELECTROLYTE CELL* – a cell in which the electrolyte is immobilized by addition of a gelling agent.
- *IEEE 1881 – IEEE Standard Glossary of Stationary Battery Terminology: GELLED ELECTROLYTE* – electrolyte that has been immobilized by the addition of a gelling agent.
- *IEEE 100-2000 - The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition: GELLED ELECTROLYTE* – electrolyte in a VRLA cell that has been immobilized by the addition of a gelling agent.

that are not genuine Gel batteries. They have been labeled as either “Hybrid” Gel or, in some cases, mislabeled completely as “Gel batteries” in order to associate with terminology that has been accepted as the standard in the industry. Extensive testing, tear-down analysis and engineering evaluations of these product types have concluded that “Hybrid” Gel batteries may be one of the following:

- AGM battery with a “gelled” top blanket but no gelled electrolyte as defined by the standards.
- AGM battery with trace amounts of silica in the electrode but not in the electrolyte.
- AGM battery with no gelled material at all.

***According to all current international standards, none of these are genuine Gel Batteries. They will NOT provide the life, performance, reliability and confidence that an off-grid renewable energy user has come to expect from the most trusted brands of genuine Gel batteries. Additionally, charging voltages for optimal performance and safety may vary significantly between manufacturers.***

### WHAT IS THE ISSUE OF LABELING A BATTERY “GEL” WHEN IT IS NOT A GENUINE GEL BATTERY?

As consumers, we all look at labels when making purchasing decisions, and

we base these decisions on the value associated with these labels. For the end user there are diminished performance benefits with AGM or “Hybrid” Gel as these technologies will not offer the life and performance of genuine Gel batteries. Off-grid users are dependent upon a battery’s overall cycle life, for which Gel is the best solution. Power demands of computers, appliances and other household equipment can put a demand on the battery system. The result is usually a deeper discharge of the battery which translates to shorter life expectancy. Although AGM batteries may provide higher initial capacity and slightly longer run-time, the trade-off is a significant reduction in the life of the battery. A genuine Gel battery could last at least 2-3 times longer than its AGM or “Hybrid” Gel counterpart in an off-grid application, and the deeper the discharge, the bigger the difference. Longer battery life reduces battery replacement providing a lower total cost of ownership.

### WHY ARE AGM AND “HYBRID GEL” PRODUCTS SOMETIMES LABELLED AS GEL BATTERIES?

Counterfeit labeling of Chinese manufactured products is a hot topic in today’s headlines. However, regardless of country of origin, AGM and “Hybrid” Gel products cost less than genuine Gel batteries to produce. They use different manufacturing processes and materials

and are not required to meet the same product definitions that genuine Gel battery manufacturers must follow. “Hybrid” Gel products and those mislabeled as Gel batteries are being misrepresented to the market in an attempt to capitalize on the long-standing, positive reputation of genuine Gel batteries.

### HOW CAN I AVOID GETTING THE WRONG BATTERY?

Renewable energy users should always verify with their renewable energy integrator that the batteries used in their system are genuine Gel batteries. The most trusted brands of genuine Gel batteries have decades of proven cycle life and performance. Give your customers the most reliable and cost-effective power solution by dispensing the battery brands most commonly associated with genuine Gel technology. **When designing your renewable energy system, insist on getting genuine Gel batteries.** ◆



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