

A Big Battery Data Management & Diagnosis Cloud Server System

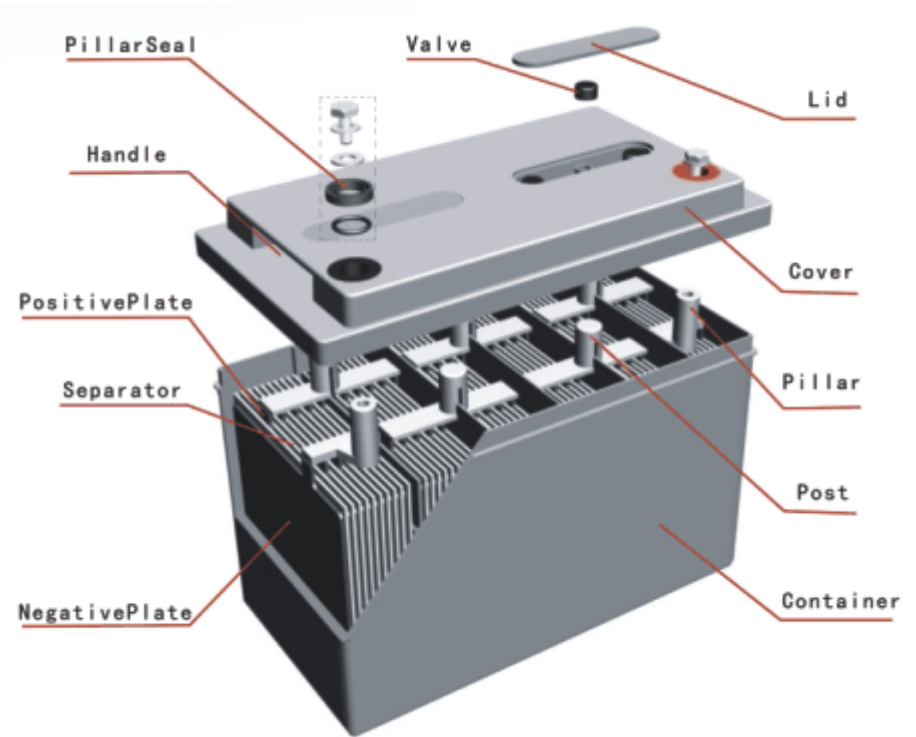
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Critical power applications demand a highly reliable and cost-effective energy storage technology. Valve regulated lead-acid (VRLA) batteries offer these benefits and continues to be the battery chemistry of choice for backup power, emergency lighting, utilities, security systems, railway backup systems, oil and gas explorations, renewable energy systems and other applications. However, as with any evolving technology, users have encountered varying degrees of performance reliability. Manufacturers and end users postulate that the premature failures experienced at some field installations may be due to temperature and charging sensitivities, manufacturing quality control, or compatibility issues with particular applications.



Battery reliability is inherently unpredictable and the reason for 85% of catastrophic UPS failures. Companies with scheduled battery maintenance programs do not avoid the risk of catastrophic failure, because brand new batteries and batteries under warranty conform to the statistical potential for failure:

- Approximately 3% of new batteries will fail during the warranty period
- In-warranty batteries in normal use can actually deteriorate (go bad) in a 2-week timeframe
- Just one bad battery can cause the entire string to fail

BATTERY FACTS

Over 75% of UPS failures can be attributed to a battery failure (Including generator start batteries).

Up to 5% of batteries fail during the warranty period.

Any string of batteries is only as good as its weakest cell.

Batteries typically fail in one to two weeks and in as little as two days.

Quarterly maintenance is totally inadequate in critical installations.

A failing battery puts additional strain on the remaining "good" batteries.

"Ten Year" batteries have a service life between four to six years.

Batteries near end-of-life have lost 20% of their original load capacity and 50% of their original runtime.



All batteries will fail, it is just a matter of time

It only takes the failure of one battery to compromise the entire battery string. Many batteries are not inspected or maintained beyond an annual service visit. Unknown and undetected battery failures become apparent right at the time when you need the batteries the most - during a mains failure.

Battery management system(BMS) is a kind of electronic device for the battery testing, monitoring and management and maintenance during the operation of the battery , by monitoring the key parameters to automatically analyze the battery problems, and provide solutions and maintenance recommendations. The BMS is an important equipment to ensure the safe and stable operation of battery pack. Monitoring and management are the basic functions of the battery management system. With the development of technology, the diagnosis of battery has gradually become the new function of battery management system.



Most of current BMS, according to their different data collection methods, They are classified into two categories: centralized and distributed mode.

The centralized mode refers to collection, DSP, control, communication interface, display and other module circuits, which are highly concentrated in one shell, and the large number of test lines and communication lines are led out to the cathode of the battery.

Distributed mode refers to the collection unit independently, directly placed next to the tested battery, saving a large number of test lines, and the distributed acquisition mode is connected to the main control device via the communication line.

The technical level of traditional BMS, only the embedded systems, such as data acquisition, storage, signal processing, and so on, have encountered bottlenecks, and can not meet the requirements of mass data mining and analysis.

In the aspect of functional, the battery status is not diagnosed. The battery equalization and extended service life of the battery distribution group has no corresponding management strategy.

In the aspect of security, field test lines and communication lines wiring cumbersome, on one hand the test lines are easily affected by the site noise and interference instrument. Anti electromagnetic interference(EMI) is poor, on the other hand, there are some security risks, and the battery may cause sudden accident, because of unforeseen wiring fault or error, lines aging problem.

In terms of network scope, the traditional battery detection is mostly local type, so it can not master battery monitoring data anytime and anywhere.

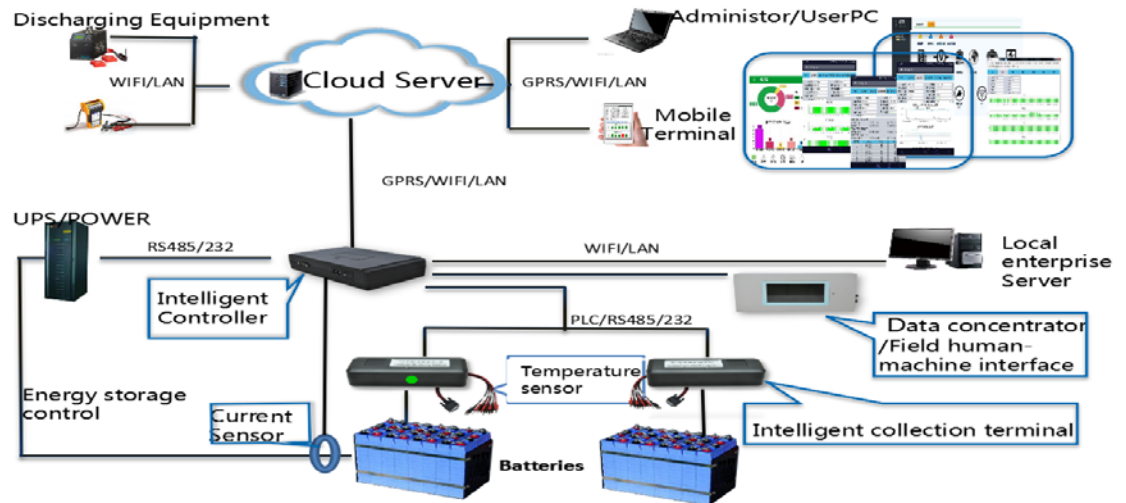
In conclusion, most battery management devices have complicated installation, insufficient management strategy and insufficient intelligence.



Architecture of Cloud Platform Battery Monitoring Management System

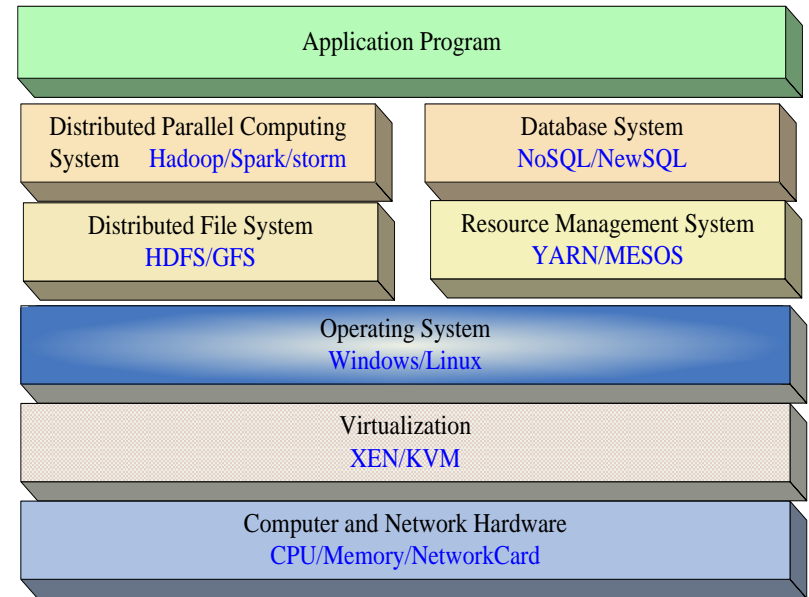
Local control layer: data concentrator, intelligent controller, enterprise server, field human-machine interface and so on;
 Telecommunication layer: GPRS, LAN, 3G, 4G communication;
 Cloud master layer: cloud server (data server, application server, management server, WEB), Interface server, firewall);
 User application layer: PC client, handheld mobile client.

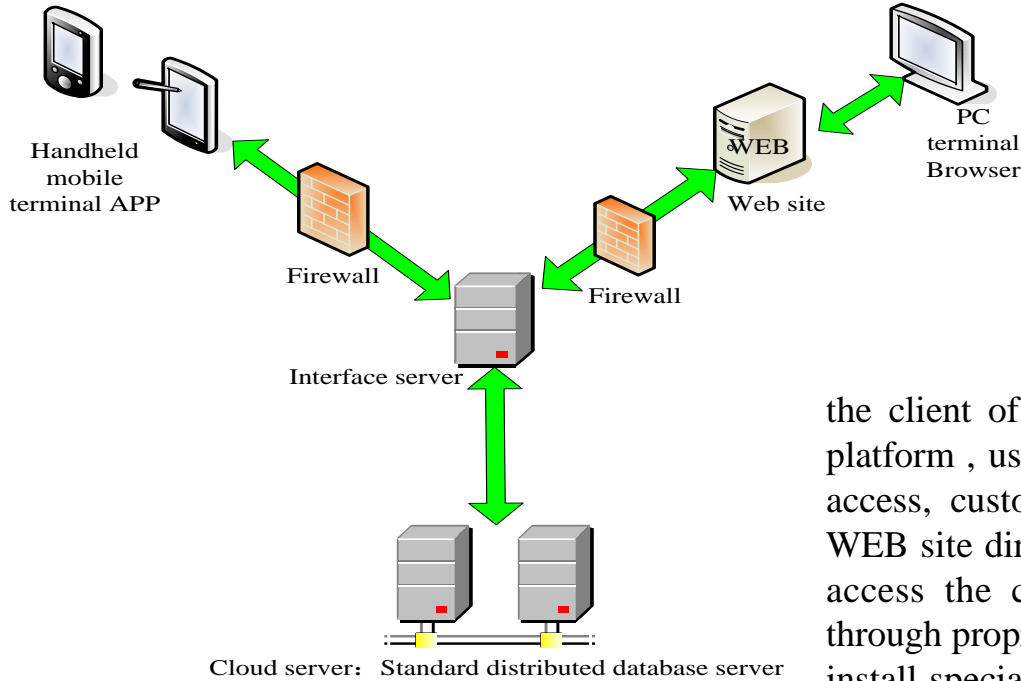
Distributed installation of intelligent battery collection terminal, a terminal can collect more battery data, including battery voltage, temperature, ohmic resistance and polarization resistance, polarization capacitance, fixed storage battery ID information, including battery type, manufacturer, production date, and battery history information, use state etc.



Application of Cloud Computing in Battery Management System

Cloud computing technology applications to solve large data storage problems, We can achieve vertical and horizontal battery data analysis. The horizontal analysis can compare the equalization of each battery, and the vertical analysis can be used to analyze the service life of the battery. It greatly improve the battery in the operation management level, a powerful data analysis support, can effectively make the battery diagnosis corresponding maintenance strategy, including battery balancing strategy, echelon use strategy, the terminal application program can provide a spreadsheet or download PDF file download.



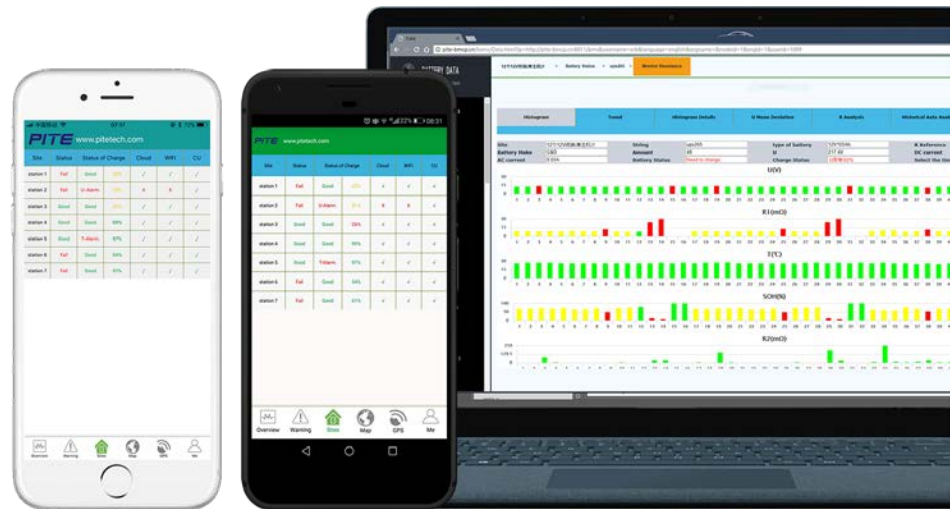


the client of Battery online management system based on cloud platform , using browser/ server (B/S) structure mode of network access, customers in the terminal equipment using the browser WEB site direct access to the system, the WEB site is not directly access the cloud distributed database, access to relevant data through proprietary interface server. The client PC does not need to install special analysis software, and the upgrade and maintenance of the software are all provided by the service provider, which is extremely efficient and convenient. Handheld mobile terminals access the interface server through the APP application.



Main function & advantage of the New Cloud Server Battery Management System

- Real-time online monitoring battery's voltage, resistance and temperature, Abnormal alarm automatically
- Intelligent to program float voltage for each cell individually, no undercharge, no overcharge
- Remote control charge-discharge cycle to active/refresh the cells, keep them in good condition
- Remote run a discharge to calculate and estimate the battery capacity status/health status
- Imbed GPS tracker, precise positioning of the equipment and send warning when they are out of range
- Years of data recording for reviewing anytime anywhere via PC, our Android App and IOS App



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