



Telecom LFP Battery System

Coslight Telecom LFP Battery System

I. Brief Introduction

GYFP-T Series LFP Battery System is high-tech product, which is developed independently by COSLIGHT. It has outstanding advantages in certain occasions of telecom power supply field, such as clean energy, environment friendly, small in size, light in weight, long cycle life, good performance in high temperature, good power characteristic and etc.

II. Outstanding Advantages in Certain Occasions

- The advantages of small in size and light in weight are suitable for small size base station in large city.

Take 48V 100AH LFP Battery System as the example:

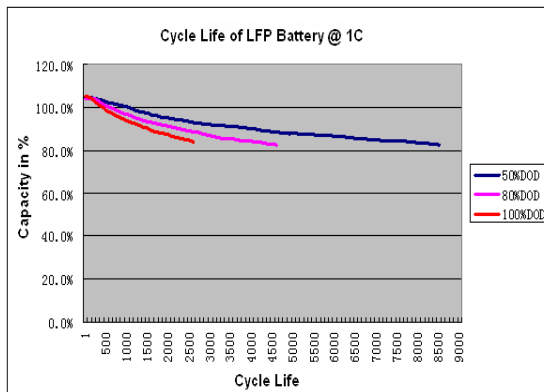
Item	LFP Battery	VRLA Battery	Comparison
Dimensions	540×220×365 mm(L×W×H)	550×440×270 mm(L×W×H)	LFP Battery is 65% of VRLA Battery in volume
Weight	70kg	148kg	LFP Battery is less than 50% of VRLA Battery in weight

Floating Lifetime of LFP battery can reach more than 20 years for using in Class I (10 hours/month of grid power outage) and Class II (10 hours/week of grid power outage) area under the intelligent management of BMS.

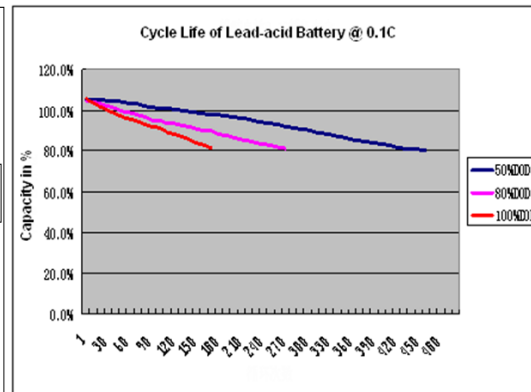


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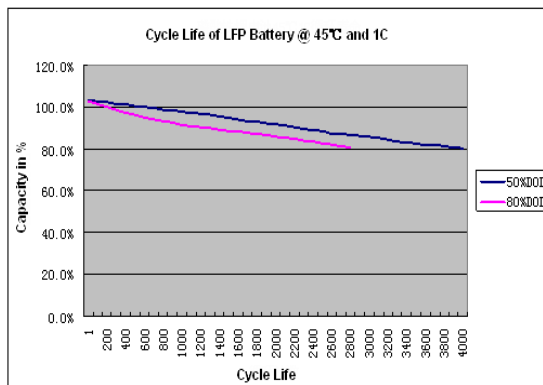
- The advantage of long cycle life is suitable for Class III (2-8 hours/day of grid power outage) and Class IV (more than 8 hours of grid power outage) area.



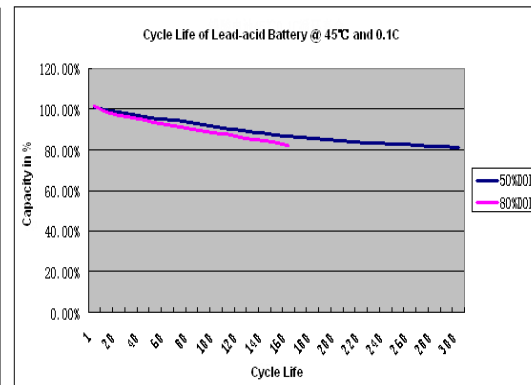
LFP battery cyclic curve in 25°C



VRLA Battery cyclic curve in 25°C



LFP battery cyclic curve in 45°C



VRLA Battery cyclic curve in 45°C

Seeing from the curve:

In 25°C, LFP battery is 17 times of VRLA Battery in cycle life.

In 45°C, LFP battery is 13 times of VRLA Battery in cycle life.

While LFP battery is 5 times of VRLA Battery in cost.

So LFP battery has high cost performance, and the annual average price is just 30% of VRLA battery.



The features can reach the advantage especially in scenarios as below:

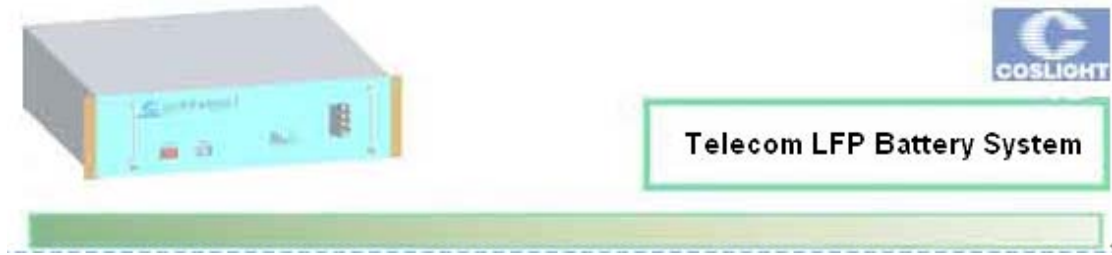
- Class III area
- No grid power area, but rely on DG and battery system
- No grid power are, but rely on solar and battery system

III. Advanced BMS

- Advanced BMS with overdischarge, overcharge, overcurrent and overheat protection to ensure communication.
- Optimize the management of float charging.
- Remote monitor and control of system by GPRS.
- The BMS can work compatibly with existing high frequency switching power supply system.
- Combine the LFP battery and existing VRLA Battery through BMS.

IV. Technical Parameters of 48V LFP Battery

Rated Voltage	48V
Charge Voltage	54V
Cut-off Discharge Voltage	42V
Charge Current	$\leq 0.6C_5$
Discharge Current	$\leq 0.6C_5$
Charge Temperature	3°C—50°C
Discharge Temperature	-20°C—55°C
Storage Temperature	-30°C—60°C



V. Recommended Application:

- Scenario I: Replace the VRLA battery by lower capacity of LFP battery
LFP battery can be charged rapidly, so it can adopt 0.6C5 to charge the battery. And there is no irreversible capacity attenuation.

In Class III area, supposed that we change the existing VRLA battery to LFP battery in same capacity, although the annual average price is just 30% of Lead acid battery, while the one-time purchase cost is 5 times of Lead acid battery, which may be challenge for customers to accept.

So we suggest that the customers can choose the LFP battery with 20%—30% capacity of VRLA battery.

For example:

- If the load current is 20A, 4 times power failure every day, and no more than 2 hours every time, you can choose 48V 100AH LFP battery and charge current can be limited between 40A—60A.
- If the load current is 30A, 4 times power failure every day, and no more than 2 hours every time, you can choose 48V 150AH LFP battery and charge current can be limited between 40A—60A.

According to the scheme above, purchasing price of every time for LFP battery is similar with the one for VRLA battery, but the using life of LFP battery is 2 times longer than that of VRLA battery.



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Comparison between Using Lead-acid Battery and Using LFP Battery

	Existing lead-acid battery	Change for LFP Battery
Type	48V 600AH	48V 150AH
Cost	About ¥21600	About ¥26800
Power supply mode	Three class power supply 4 times power failure every day and no more than 2 hours every time	Three class power supply 4 times power failure every day and no more than 2 hours every time
Expected life time	≤2 years	≥4 years

■ Scenario II: Combine the LFP battery with existing lead-acid battery together

- If the load is less than 1.5KW in Class III area, and there is already lead-acid battery in base station, if so, just add one set of 48V 100AH LFP battery. And Using the LFP battery with existing lead-acid battery together through the management of BMS can lengthen the service life of original VRLA battery. The LFP battery will charge and discharge preferentially when four grid outages in one day, and every time is less than 2 hours. While the VRLA battery will begin to work when every outage is more than 3 hours and the capacity of LFP battery is not enough to supply.

So just add one set of 48V 100AH LFP battery with the cost of ¥20000. The service life of LFP battery is two times as long as that of VRLA battery, and can increase the service life of existing lead-acid battery more than one time. That is an excellent scheme.

- If the load is less than 1.5KW in Class III area with frequent power failure, and there is already lead-acid battery and DG for power



supply in base station, if so, just add one set of 48V 100AH LFP battery. And Using the LFP battery with existing lead-acid battery and DG through the management of BMS can not only lengthen the service life of original VRLA battery, but also reduce the starting times of DG and save the fuel, which will lengthened the service life of DG immensely.

- If the load is 3.0KW, 48V 200AH LFP battery will be suitable.

VI. GYFP-T Series Telecom LFP Battery System

Five series are available as below:

- GYFP-TC series: Cabinet battery system
- GYFP-TS series: Rack battery system
- GYFP-T series: (ETSI 19 inches rack) battery system
- GYFP-TX series: (ETSI 19 inches/Narrow Module) battery system
- GYDY-FP-T series: LFP battery integration power system

As the newest generation of battery products, LFP battery will replace the lead-acid battery for telecom using with the outstanding advantages of clean energy, environment friendly, small in size, light in weight, long life and etc. We hope to carry forward these superiorities of LFP battery to better.