Frequently Asked Questions

1. What is a Lithium Iron Phosphate Battery?

Lithium Iron Phosphate (LiFePO4) is a type of rechargeable battery, specifically a lithium-ion battery, which uses LiFePO4 as a cathode material. LiFePO4 provides several advantages over traditional Lithium-Ion batteries based on LiCoO2.

LiFePO4 batteries have somewhat lower energy density than the more common LiCoO2 design found in consumer electronics, but offer longer lifetimes, better power density (the rate that energy can be drawn from them) and are inherently safer.

Nominal voltage of **3.2V per cell** - charge voltage of 3.6V per cell

LiFePO4 batteries can offer a cycle life of potentially 2,000+ charge cycles, have an average service life of between 8 to 10 years, and can be expected to deliver reliable and consistent performance throughout its lifetime.

2. Why use a Lithium Iron Phosphate Battery?

Features & Benefits		Drypower Lithium LiFePO4	VRLA Lead Acid Equivalent
High Cycle Life	Get more use out of Drypower Lithium batteries for effectively lower total cost of ownership.	>2000 cycles @ 80% DoD	320 cycles @ 80% DoD
Lightweight	Provides more Wh/Kg while also being up to 1/3 the weight of its SLA equivalent.	100Ah @ 14.3kg	100Ah @ 30.0kg
Better Storage	Storage is not a problem thanks to extremely low self discharge (LSD) and no risk of sulphation.	12-18 months+	3-6 months
Quickly Recharge	Save time & increase productivity with less down time thanks to superior charge/discharge efficiency.	5hrs @ 14A charger 96% efficiency	12hrs @ 14A charger 60-90% efficiency
Extreme Heat Tolerance	Suitable for a wider range of applications where operating temperature is considered too high for SLA.	Up to +60°C	+24°C rated
Longer Service Life	Low maintenance batteries with stable chemistry. Easily monitor state of health (SoH) of smart models.	8-10 year service	3-5 year service

3. How safe are Lithium Iron Phosphate (LiFePO4) Batteries?

LiFePO4 batteries are considered to be non-flammable, non-hazardous and therefore inherently safe by international and federally regulated standards.

All Drypower Rechargeable Lithium batteries adhere to strict safety guidelines by incorporating Battery Management Systems (BMS) into each battery.

The inclusion of a BMS plays an important role in that it helps to:
1. Maintain safety for users.
2. Prevent damage to equipment and property.
3. Almost completely eliminate concerns about use of the wrong charger for this chemistry type.
4. Minimise the risk of over-discharging and damaging the batteries.
5. Provide short circuit and overcharge protection.

'Smart' models (E3) feature a SMBus communications port for easy and in depth monitoring of your battery.

4. What are Smart Battery Models (E3)?

'Smart' models (indicated with suffix -E3) feature a SMBus communications port for easy and in depth monitoring of your battery or battery fleet.

These models allow for external monitoring, via different evaluation software options, and provide instant information such as:

- Cycle count
- Individual cell voltages
- Remaining capacity
- State-of-charge (Coulomb Counting)
- Service time
- Battery Manufacture Date
- Temperature
- and much more!

5. What applications are Drypower LiFePO4 Batteries suitable for?

Lithium Iron Phosphate can be used in any application that would normally use a single or multiple configurations of Lead Acid, GEL or AGM batteries. LiFePO4 in 4S = 12.8V and 8S = 25.6V is closest to Lead acid equivalents of the lithium rechargeable types.

Suitable applications include caravan, marine, golf carts & buggies, solar storage, remote monitoring, switching applications and more.

LiFePO4 12.8V battery modules/packs should be used stand-alone only. The maximum allowable is 2 in Series and 3 in Parallel in "pre-approved" applications with the correct LiFePo4 charger specified.

Please consult with a Drypower techincal expert for more information regarding your application.

6. Can Drypower Lithium be used under a car bonnet?

We recommend you do not use this battery pack in a vehicle with a combustion engine that has an alternator, generator or stator charging system – these charging systems are not compatible with LiFePO4 charging requirements. Excessive heat environment exposure over 65°C will drastically shorten battery life.

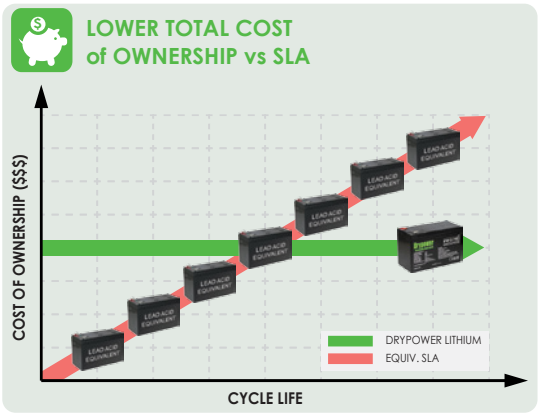
Drypower Lithium batteries are designed for deep cycle or standby use and the maximum current output is limited. Do not use for jump starting or engine starting systems.

7. How long do LiFePO4 batteries last?

Drypower Lithium batteries will provide you with up to 2000 charge and discharge cycles at 80% Depth of Discharge (DoD). An equivalent Lead Acid battery is rated to approximately 300-320 cycles. After 2000 cycles, a Drypower Lithium battery will typically still have over 80% of usable energy left (i.e. a 12V 100Ah battery, after being discharged 80% for 2000 cycles, will effectively be a 12V 80Ah battery).

Measured in years, if a Drypower Lithium battery is cycled every day for 6 years to 80% DoD, it will still have about 80% available capacity! You can also achieve up to 5000+ cycles @ 50% DoD and up to 10000+ cycles @ 10% DoD!

8. So they provide better value than AGM/Lead type batteries?



YES: By providing superior cycle life and more usable battery capacity, your 'Total Cost of Ownership' will be significantly less and offer a better return on investment than conventional lead batteries.

Drypower Lithium features extended service life to reduce replacement costs (battery and labour), faster recharge times to minimise battery down time, and Smart battery options for remote monitoring of the battery's state of health.

9. Can you use SLA chargers for LiFePO4 Batteries?

We DO NOT recommend using lead-acid chargers.

A major difference between how one treats Lithium-Ion (including LiFePO4) and Lead-Acid (SLA) batteries appears at the point of full charge:

For SLAs, one obtains the best lifetime by continuously maintaining them at a constant voltage - typically 13.5-13.8 volts for a "12 volt" lead acid battery. Lithium types should not be maintained at the "full charge" voltage after full charge has been achieved.

No High Voltage "desulphation" charge is recommended (PCM/BMS controlled).

What happens with Lithium-Ion batteries (including LiFePO4) is that if you maintain the "full charge" voltage its internal chemistry degrades much more rapidly than if you were to fully-charge the battery and then immediately disconnect the source, allowing the voltage to sink down a bit on its own. What this means is that you will get much better longevity out of a Lithium pack if you do not keep a high-level float charge on it.

In fact, to get the best longevity of Lithium-type rechargeable batteries, store them at a 50% state of charge. We also recommend that you check the voltage once in a while to minimise any damage caused by prolonged storage at extra low voltage levels.