Aegis Battery offers products made to the highest ISO 9001:2008 Standards and upon demand can individually procure and supply UL, UN, CE, IEC, and IEEE Certificated Systems. Aegis Battery provided a variety of product based on chemistries of Lithium Iron Phosphate (LiFePO4/LFP) and Lithium Nickle Manganese Cobalt Oxide (Li-NMC/NMC) and semi-solid Li-ion battery.

Lithium Iron Phosphate (LiFePO4/LFP) batteries have considerably greater energy density making them perfect for numerous applications. LiFePO4 is safer, less toxic, and more energy efficient with significantly longer cycle life compared to traditional lead acid batteries. Other benefits include high specific energy capacity, compact size, lighter weight, superior thermal and chemical stability, improved cost performance, and enhanced charge and discharge rates. We can deliver a substantially longer per/unit cycle life up to 3000+ cycles with 80% recoverable capacity.

Lithium Iron Phosphate (LiFePO4/LFP) Lithium Nickle Manganese Cobalt Oxide (Li-NMC/NMC) delivers considerably greater energy density when compared to lead acid and nickel cadmium. It is also considered safer when compared to lithium oxide or mixed oxide battery products. Punctured or short-circuited lithium metal oxide cells will cause heating, oxygen release and the potential for thermal runaway.

Aegis Battery offers products made to the highest ISO 9001:2008 Standards and upon demand can individually procure and supply UL, UN, CE, IEC, and IEEE Certificated Systems. Lithium Iron Phosphate (LiFePO4/LFP) and Lithium Nickle Manganese Cobalt Oxide (Li-NMC/NMC)

Safe

Our Lithium Iron Phosphate (LiFePO4) batteries are inherently safer than other lithium batteries. LiFePO4 cells under puncture or short circuit conditions are much less likely to experience thermal runaway than other types of lithium batteries. Other types of lithium batteries will have thermal runaway which can cause fires with temperatures reaching up to 1000°C which is self-perpetuated by released oxygen from within the metal oxide cathode materials. The bond with oxygen in lithium metal oxide cells is much weaker than the oxygen bond with phosphorous in a phosphate thus permitting lithium metal oxide thermal runaway at much lower temperatures.

Lithium ion batteries, by definition, are energy storage systems. As a result, if exposed to abusive conditions, the energy in the system can be suddenly released, causing safety issues. Since different lithium chemistries exhibit different safety profiles, the challenge of mitigating safety risks in any application rests with choosing the right lithium ion technology for the application.

In small format applications the lithium cobalt oxide chemistry has been the go to choice. Cell phones and laptop batteries are commonly made with lithium cobalt oxide (LCO). LCO has a greater energy density than lithium metal phosphates (LMP). As a result, it’s been adopted as an acceptable solution for small format applications. However, it is important to note that there have been numerous reports of battery related safety issues even in such devices as laptops and cell phones.

Over 45 million cell phone batteries and over 10 million laptop batteries using LCO technology have been recalled due to the batteries catching fire or exploding. In such small devices safety concerns regarding batteries can generally be managed. Despite the safety concerns with this battery chemistry it is well accepted in the battery industry because the risk of fire or explosion can be mitigated using electronics or other external safety devices.

Many new markets are seeking to use lithium ion technology in large format applications because of the benefits it offers. However, in large format applications such as cars, buses, and airplanes the choice of cathode material becomes more critical with respect to its inherent chemical safety factors. In such large format applications the risk of adverse events is not as readily managed nor can it be tolerated as in the small, portable devices.

Modular

Aegis Battery produces batteries with the same form factors as standard lead acid batteries making our batteries a perfect drop in replacement. This will make it a quick and simple process when replacing an old battery. These attributes allow for a seamless transition from lead acid to lithium ion.

Besides standard form factors, Aegis Battery also produces batteries with different form factors to give customers more options to pick from. If the customers cannot find a form factor that will fit in their custom application we might be able to make a custom battery for them. From standard form factors to custom form factors, we do our best to meet all of our customers' needs.

Service & Support

Aegis Battery has a team of excellent employees ready to provide customers with excellent customer service. Our highly skilled engineers and technicians make sure that every battery that is shipped out is in perfect condition so that when the customers receive their product there will be no problems. In the off chance that there is a problem with the battery our customer support group will handle the situation to make sure everything goes smoothly and that all problems will be resolved.

Besides resolving issues, our team can help customers find the perfect battery for their applications. We strive to ensure all our customers receive the perfect support from our team and that they are happy with the battery they bought.

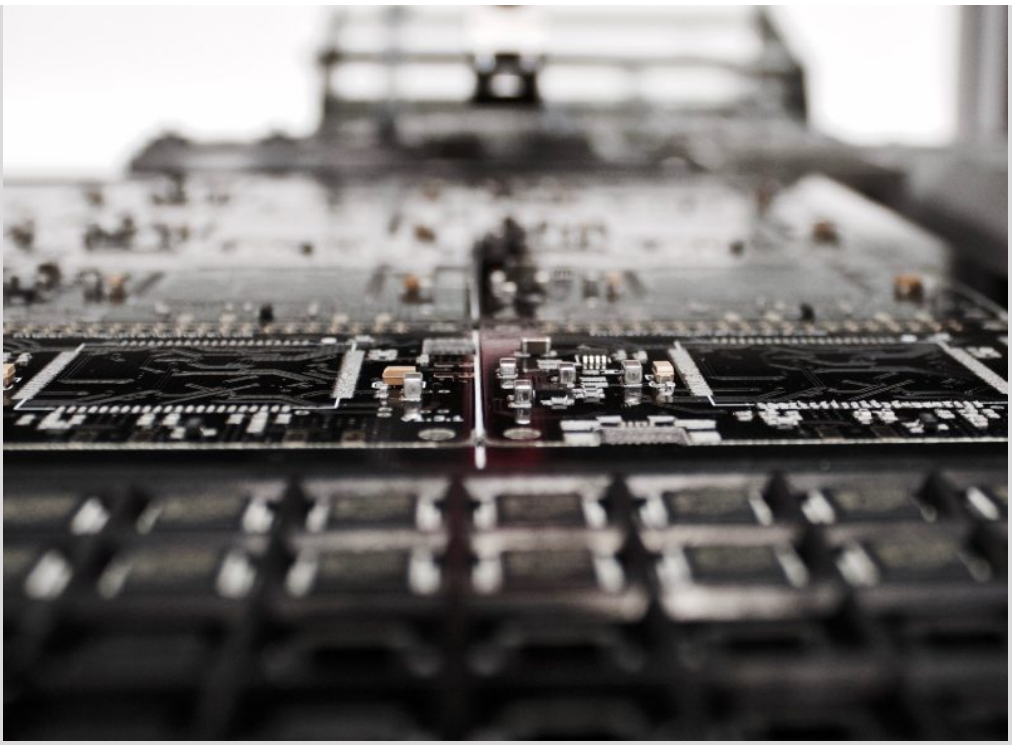
Comparative Analysis

Lithium Iron Phosphate (LiFePO4) batteries are not only the safest, but they are also the most efficient on multiple axes. LiFePO4 batteries are less than half the weight of lead acid batteries. This makes the battery safer to carry and can help reduce the overall weight of all applications. If LiFePO4 batteries were sized such that it stores the same amount of energy as a lead acid battery, it will be at least half the size. LiFePO4 batteries have 2 times the energy for the same volume of a lead acid battery. This makes them much more efficient that lead acid batteries. LiFePO4 batteries have 4 times the energy for the same weight. In many applications, weight is the critical metric for efficiency, and this is where LiFePO4 batteries excel. LiFePO4 batteries store four times the energy and offer ten times the cycle life compared to lead acid batteries. Combined with the fact that this battery chemistry is lighter it is the perfect battery to replace lead acid batteries.

Long Cycle Life

Traditionally, the cycle life of a battery is the number of cycles of charge and discharge a battery can undergo while still retaining 80% of its initial capacity. The 80% limit is a legacy value left over from lead acid battery testing because once a lead acid battery reaches 80% of its original capacity it may exhibit sudden death as the capacity can plummet rapidly thereafter.

As a result of our stable, high quality chemistry, the Aegis Battery product line has superior cycle life compared to lead acid batteries. Our LiFePO4 batteries have a cycle life of 3000+ with an 80% recoverable capacity. This cycle life is amazing compared to lead acid batteries that needs to be replaced after around 200-300 charge cycles. Even after the capacity for LiFePO4 batteries have diminished it can still be used in other applications where the rest of the capacity could be useful.



Environmentally Friendly

Aegis Battery is aware that mass manufacturing large format packs and modules increases risk to the environment. Our Lithium Iron Phosphate (LiFePO4) chemistry utilizes environmentally acceptable materials, is recyclable and has several environmental advantages over rival battery manufacturers. These include:

- There are not heavy metals in our chemistry
- Phosphate salts are less soluble than the oxide equivalent
- Lower solubility means that there less potential for leaching
- Phosphate anion allows the use of non-toxic metals
- Both cobalt and nickel (used in competing chemistries) are toxic and have chronic exposure hazards

Technical Services

Aegis Battery offers cost-effective, comprehensive service of material/cell development, and the associated microstructural examinations and electrochemical property characterization to its customers including small businesses, national laboratories, universities, and large corporations. Its manufacturing capabilities provide these services to produce custom-designed electrode materials, battery cells, and battery packs in a flexible quantity.

Over recent years Aegis has provided a variety of electrochemical testing services for lithium-ion coin cell and pouch cell fabrication and performance testing to evaluate materials' characteristics at the cell level. Electrode/cell fabrications include the selection of active material loading, coating thickness, binder type (aqueous/non-aqueous) and content and current collector.

Testing services include: (1) Voltage profile; (2) Charge and discharge cycling; (3) Rate capability; (4) Cyclic voltammetry (CV); (5) Cell testing at different temperatures (-40°C to +90°C); and (6) Cell failure analysis.

Solid State Lithium Development