Types of Battery Cooling System

CM Batteries are focusing on manufacturing and designing battery packs with advanced technology to reduce the heat and ensure the reliablity in high temperatures and high discharge current environments.
We'll explore 4 types of battery cooling system.

Battery Cooling Technology Methods

1. Battery Forced Air Cooling

Q: What is forced air cooling for batteries ?
A: This method will use fans to dissipate heat from the battery pack by airculating airaround the batteries.The forced air cooling remains a cost-effective but it has a lower heat capacity than liquids or phase-change materials cooling methods.

2. Phase Change Cooling

Q:What is phase change cooling for batteries ?
A:This method is an advanced thermal management technique that use phase change materials to absorb and dissipate heat.When the temperature of the battery rises,the PCM absorbs the excess heat preventing the battery from overheating. It take time for the material to cool and solidify again, which might limit its effectiveness in continuous high-load situations.

3. Heat Pipe Cooling

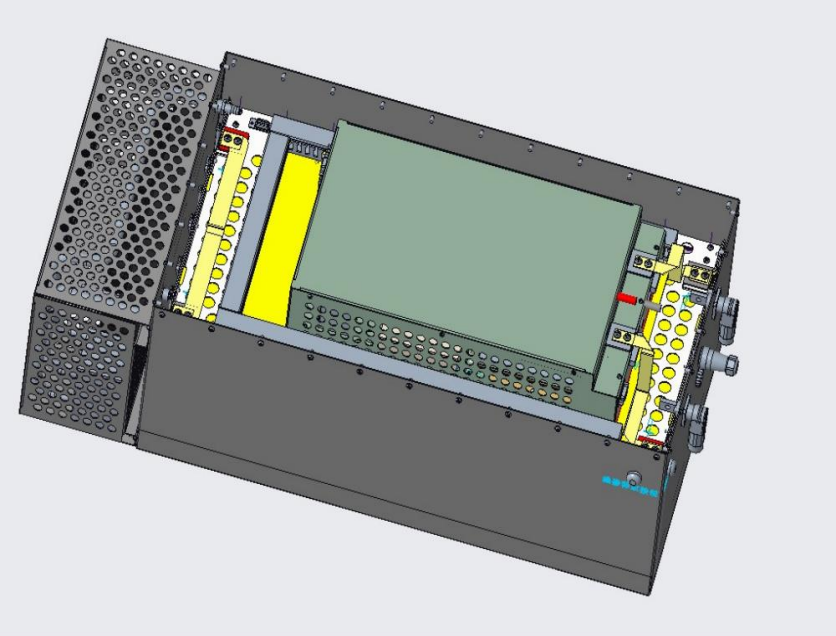
Q:What is heat piple cooling for batteries ?
A:Heat piple cooling is a passive and highly efficient thermal management solution that transfer heat from a hot area (the battery cells) to a cooler area (the heat sink).Integrating heat pipes into battery packs requires precise design and manufacturing,which can increase complexity and cost.Heat pipe cooling can be combined with other thermal management methods -forced air cooling and liquid cooling.

4. Immersion cooling

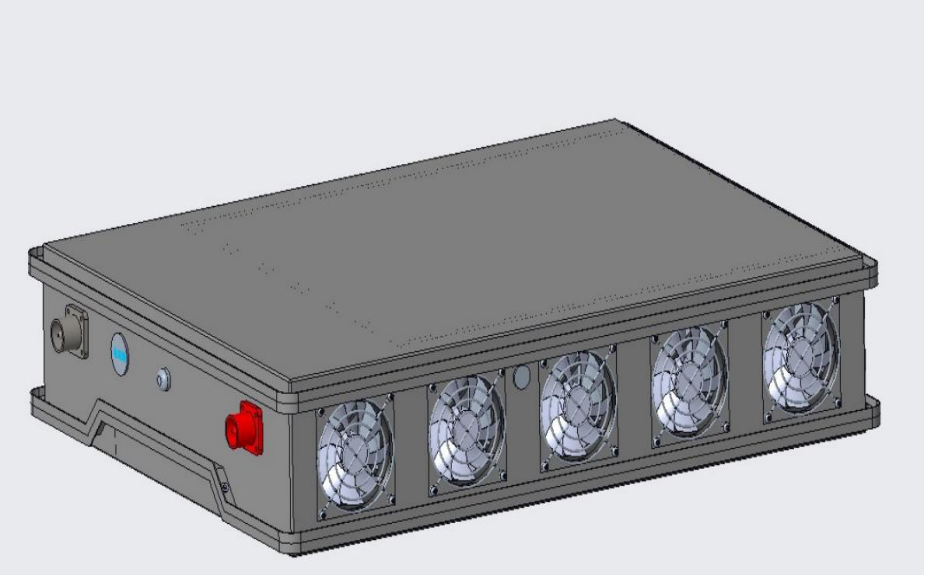
Q:What is immersion cooling for batteries ?
A:Immersion cooling for batteries is a thermal management technique and the batteries are submerged in a dielectric fluid that directly removes heat from the battery cells.This method ensures efficient and uniform cooling.This liquid absorbs heat generated during battery operation and discharge it via heat exchanges.Immersion cooling systems are more expensive than other cooling systems.

CM Batteries are researching advanced technology to ensure the batteries with reliable and optimal performance.We'll share some cases that we provide custom batteries assembly combine with several cooling methods.

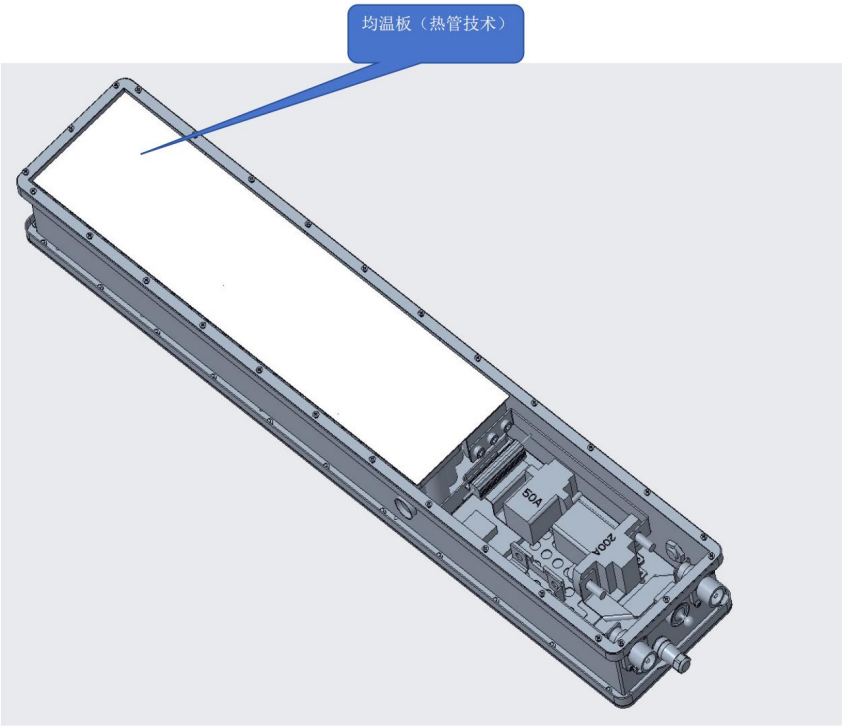
1. Case -409.6V 15Ah LiFePO4 Battery Pack
Combination :128S1P
Chemistry :LiFePO4
Application :Yacht or Boat
Communication :RS485
Cooling Methods : immersion cooling & forced air cooling



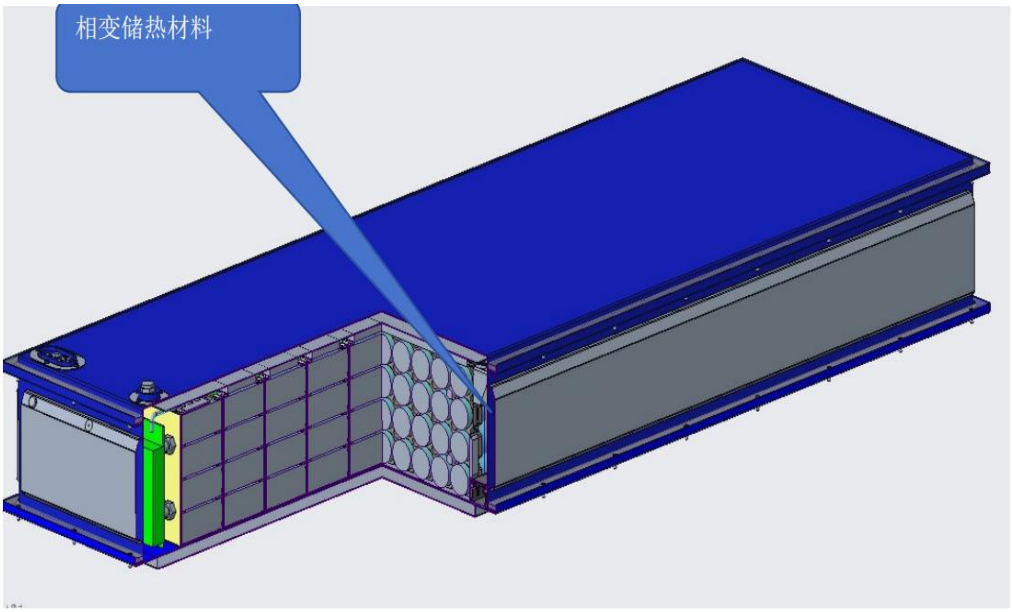
2. Case-72V 200Ah Li ion Battery Pack
Combination :20S1P
Chemistry :Ternary Lithium
Application :Agricultural Robots
Communication :RS232
Cooling Methods:Forced air cooling



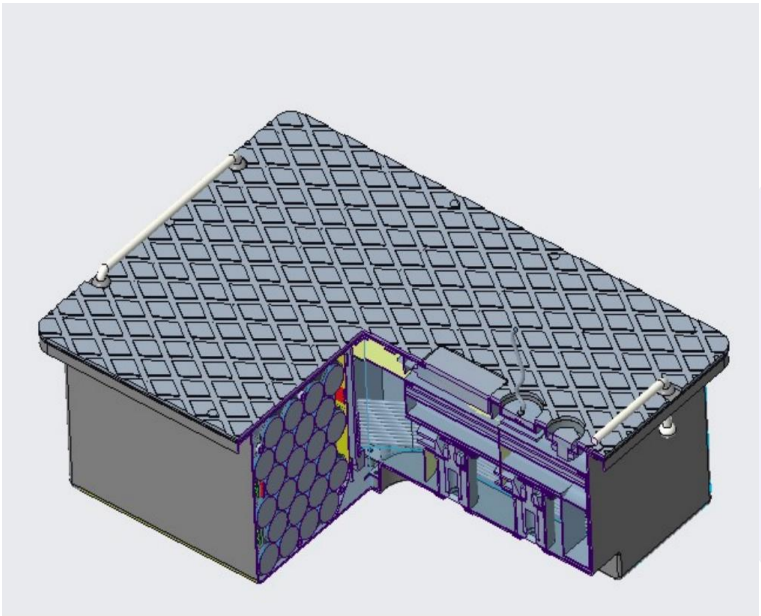
3. Case -48.1V 45Ah Li ion Battery Pack
Combination :13S10P
Chemistry :Ternary Lithium
Application :Power for outdoor medical device
Communication :N/A
Cooling Method:Heat Pipe Cooling



4. Case -48.1V 200Ah Li ion Battery Pack
Combination :13S10P
Chemistry :Ternary Lithium
Application :Outdoor environmental monitoring devices
Communication :RS323
Cooling Method :Phase change cooling



5. Case -74V 60Ah Li ion Battery Pack
Combination :20S12P
Chemistry :Ternary Lithium
Application :Transportation Robots
Communication :CANBUS
Cooling Method :Immersion cooling



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