

# Immersion battery technical parameter table

Does immersion cooling reduce the temperature rise of the battery module?

Compared with natural cooling, immersion cooling can effectively reduce the temperature rise of the battery module. To further examine the applicability of this cooling method, the immersion cooling performance of the 8S3P battery module with five different coolants at high discharging rates (4C, 6C, and 8C) was analyzed.

What is the temperature uniformity of immersion cooling battery pack?

The experimental apparatus of the immersion cooling battery pack was also developed to explore the heat dissipation and temperature uniformity at 2C discharge rate. The simulation results were in well agreement with the experimental results, with the deviation less than  $0.43\text{ }^{\circ}\text{C}$  when the flow rate exceeded  $0.6\text{ L/min}$ .

Is immersion liquid cooling a good solution for battery pack thermal management?

**Conclusions** The immersion liquid cooling technology has been a promising solution in thermal management of battery packs for electric vehicles. From the application point of view, an immersion cooling battery pack consisting of 60 cylindrical Li-ion cells, using YL-10 as the coolant, was designed.

What is the immersion cooling model of the battery module?

The immersion cooling model of the battery module is shown in Fig. 1, where the active material part of the battery was completely immersed in the coolant, and the dimensions of the immersion battery module were  $346\text{ }^{\circ}\text{mm}$ ;  $38\text{ }^{\circ}\text{mm}$ ;  $128\text{ }^{\circ}\text{mm}$ . The thickness of the fluid domain on the side of the battery module and between each row of the cells was all  $2\text{ }^{\circ}\text{mm}$ .

Does immersion cooling work on 8s3p battery module?

Immersion cooling was applied to an 8S3P battery module. The cooling performance of the battery module at high discharging rates was studied by using five different types of dielectric coolants. The immersion cooling model of battery module was established.

What is the temperature control process of immersion cooling battery pack?

To facilitate the observation of the temperature control process of the immersion cooling battery pack, the heating rods were initially heated to  $35\text{ }^{\circ}\text{C}$  before initiating the circulation of the coolant. The coolant inlet temperature was set to  $25\text{ }^{\circ}\text{C}$  (controlled by the thermostatic bath), and the coolant flow rate was sequentially adjusted.

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The lithium-ion batteries' nominal voltage and capacity are 3.7V and 2.6Ah. The battery's cathode is lithium

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cobalt oxide ( $\text{LiCoO}_2$ ), and the anode is graphite. More detailed parameters of the batteries are listed in Table 4. In the model, the distance between the batteries and the space between the batteries and the outer wall is set to 2 mm ...

Technical Report Documentation Page 1. Report No. DOT HS 813 136 2. Government Accession No. ... for battery immersion testing, differences can be observed for the various testing standards in three primary areas: (1) the salinity of water used for immersion, (2) the duration of immersion, ... with underlining to emphasize key parameters and ...

The main focus of the paper will be on aspects of immersion cooling and the performance assessment of the dielectric fluid that comes directly into contact with the cells to remove excessive heat generated by them. Keywords: battery, BEV (battery electric vehicle), fast charge, heat exchange, power density, thermal management 1 Introduction

To investigate the heat transfer characteristics of the liquid immersion cooling BTMSs, the 3D model of the 60-cell immersion cooling battery pack was established, and a ...

All LIBs are connected in an 8S4P manner, as illustrated in Fig. 1 (c), and Table 1 shows the battery pack's basic parameters. For the LIBTMS proposed in this work, it is necessary to regularly replace and monitor the coolant, check system integrity, monitor temperature, clean and conduct electrical inspections to ensure long-term stable operation of ...

To investigate the efficacy of the lithium-ion immersion cooling strategy, an experimental comparison was conducted to evaluate the temperature rise performance of the ...

The main focus of the paper will be on aspects of immersion cooling and the performance assessment of the dielectric fluid that comes directly into contact with the cells to remove ...

Immersion in mineral oil is used to cool a lithium-ion battery module with two serial and seven parallel (2s7p) electrical connections. The battery pack and coolant model's geometric structure, along with the pertinent dimensional parameters, are depicted in Fig. 1. Table 1 shows the geometric parameter values for the computational domains. The ...

The need for more advanced battery thermal management systems (BTMS) has been increasing since recent years. Application of different types of coolants with immersion cooling with high-rate discharging was studied. Immersion cooling was applied to an 8S3P battery module. The cooling performance of the battery

The most important factor when designing EV batteries or battery management systems (BMSs) is safety. Safety is collectively pursued in industry via stringent regulation and certification and ensured through testing. ...

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