New high temperature technology from CUSTOMCELLS®

RECHARGEABLE LI-ION BATTERY CELLS TEMPERATURE RESISTANT UP TO 150 °C

Previously available lithium-ion battery cells are usually limited to a very narrow temperature range, which is close to room temperature. Even at slightly higher temperatures, such as in a car during summer time, lithium-ion batteries can be damaged. For example, if lithium-ion batteries from power tools are left in the trunk of a car. Other energy storage systems such as lithium metal batteries may allow for higher application temperatures under certain circumstances, but at the same time have a high-risk potential and are not rechargeable. Still other battery systems only tolerate a temperature range of few degrees higher than that of classic lithium-ion batteries, but again do not cover the very high temperatures that occur, for example, during autoclaving of medical products or deep geological drilling.

++ HIGH TEMPERATURE TECHNOLOGY IN COMPETITOR COMPARISON ++

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>Standard Lithium-Ion</th>
<th>CUSTOMCELLS® HT Lithium-Ion</th>
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</thead>
<tbody>
<tr>
<td>-20 to 60 °C</td>
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<tr>
<td>0 to 125 °C</td>
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<tr>
<td>-40 to 150 °C</td>
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<tr>
<td>0 to 150 °C</td>
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<tr>
<td>-30 to 85 °C</td>
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<tr>
<td>125 °C</td>
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<tr>
<td>150 °C</td>
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</tbody>
</table>

++ YOUR STORAGE SOLUTION FOR AN EXTENDED TEMPERATURE RANGE ++

With its rechargeable high-temperature technology, CUSTOMCELLS® offers a solution that satisfies the most important requirements such as particularly high intrinsic safety, reliability and performance at particularly high temperatures of up to 150 °C. This combination of outstanding properties is particularly well suited for demanding applications in a wide range of fields such as medical technology or in the oil & gas industry.

++ THE HIGH TEMPERATURE TECHNOLOGY IS FLEXIBLE IN FORMAT ++

The CUSTOMCELLS® high temperature battery technology can be manufactured in various sizes in hard cases. Starting with a DD cell size with MM terminals, a number of other cell sizes can be realized in flexible or standardized dimensions. CUSTOMCELLS® accompanies customers from the initial adaptation of the cell to the specific application, through the investigation of technical feasibility and the construction of pilot series including relevant tests, to further development of the series product including certification for a wide range of applications.

++ YOUR CONTACT FOR HIGH TEMPERATURE TECHNOLOGY ++

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EXEMPLARY APPLICATIONS

- OIL & GAS
  - MWD/LWD/D Inspection
  - Pipeline Inspection (PIG)
  - Low magnetic signature

- MEDICAL INDUSTRY
  - Sterilizable

- DEFENSE
  - Safe to use and reliable under extreme conditions (over 50 °C)

- INDUSTRIAL
  - Safe to use and reliable under extreme conditions (over 50 °C)

- PHOTOVOLTAIK
  - Safe to use and reliable under high ambient temperatures (over 50 °C)

KEY FEATURES
- Hard case cells in different formats and capacities
- Operation at wide temperature range
- Rechargeable up to 150 °C
- Safety tested up to 170 °C
- Rechargeable at elevated temperatures
- Adaptable cell geometry for different battery setups
- Very safe, durable and stable up to 150 °C

CUSTOMIZING
CUSTOMCELLS® HT-Li-ion rechargeable cells can be customized in different cylindrical and prismatic sizes as well as performance wise to different applications.

ILLUSTRATION NOTES
+ Conventional lithium-ion battery cells only guarantee a high life expectancy within a very limited temperature range (typically 0-40 °C). They age quickly when operated or stored at temperatures above 60 °C. This is reflected in a very rapid reduction in storage capacity.
+ The lithium-ion high-temperature technology of CUSTOMCELLS® enables particularly long operating times at elevated temperatures. The comparison with a previously available lithium-ion battery for higher temperatures shows the technological advantage of the new development of CUSTOMCELLS®.
+ CUSTOMCELLS® high-temperature technology means that the life (remaining capacity of 80%) of a battery cell at 75 °C is significantly longer.
+ At unusually high temperatures, the cell with new technology - compared to previous rechargeable battery cells - can be in use for much longer periods of time.