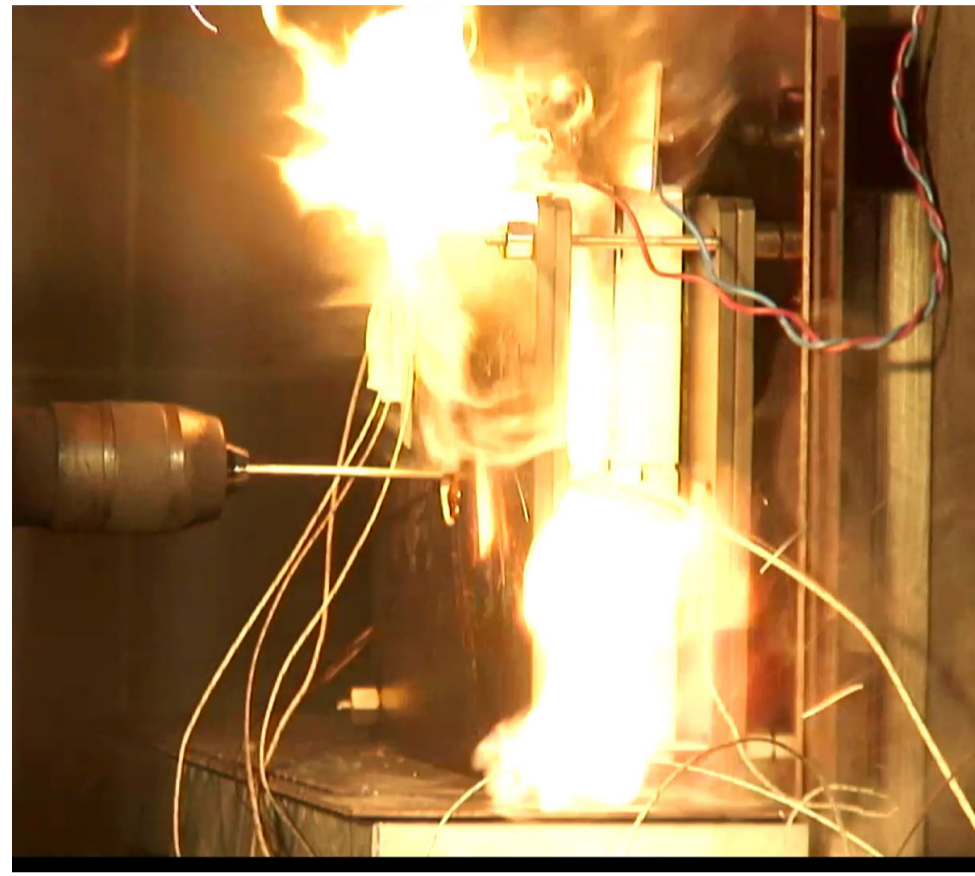


eLaB - Test Facility and Safety Tests

H. Döring, M. Wörz, H. Brazel

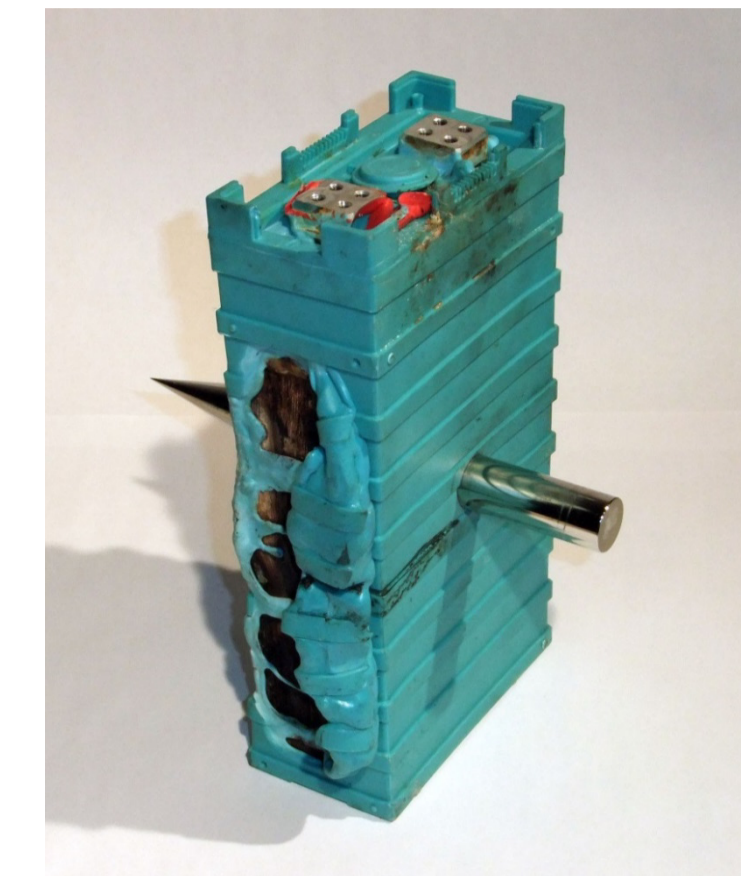
Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW)
Lise-Meitner-Str. 24, D-89081 Ulm, GERMANY
phone: +49 (0)731 95 30-506, fax: -599; email: harry.doering@zsw-bw.de

Intension



Do lithium-ion batteries produce a hazard potential?

*Not necessarily
We will find it out
for you!!*



Successful nail penetration cell

Facility

- Three specialized bunkers for electrical, mechanical and thermal abuse tests
- All bunkers with washing unit for gas cleaning (treatment of the emissions) and over-pressure protection of the bunker
- Fire extinguishing systems (CO₂ and water based fire extinguisher)
- All bunkers with HD video observation and optional IR video or high speed video observation



Electrical

- Controlled high current pulse load up to 1500 A for testing high current stability (max. 20 V)
- Short circuit test permanent and for certain time, temperature behavior, infra red emission thermal analysis, I_{max} peak measurable 15 000 A
- Over-charge and over-discharge conditions in various ranges



Short Circuit

Mechanical

- Breaking strength
- Mechanical stability of the construction and storage system
- Quasi static crush tests for cells, modules and battery pack systems up to 100 tons vertical, 50 tons horizontal
- Identification of weak construction points by vibration and mechanical shock tests



Hydraulic Press

Thermal

- Testing of temperature stability of storage unit and components (-70 to 300°C)
- High temperature exposition like fuel fire test or flammability test



Temperature Chamber

Shake & Shock of Cells and Modules



- Sinus force peak 20 kN
- Max. acceleration sinus peak 60 g_n
- Payload up to 70 kg
- Amplitude pk-pk 50 mm
- Work surface 600 x 600 mm
- Temperature chamber -70 to +180°C

Leistungsfenster Vibrator LDS V850 für Sinusanregungen

