

# Battery Testing & Certification

VDE PrimeLabs

# VDE Group Overview



## Global Network

- >30.000 Members
- >1.500 Corp. Members
- >6.000 Students
- >250 Universities
- >2.000 Employees
- >5 Expert Societies  
Energy, ICT, Automation,  
Microelectronics,  
Biotechnology

## Technology Services

- VDE Innovation &  
Technology Services
- VDE Renewables  
with VDE PrimeLabs
- VDE IT Security  
CERT, Smart Technologies
- VDE Digital Platform
- VDE Global Services
- VDE Americas

## Standardization and Service

- DKE  
German commission for  
standardization (IEC)
- FNN  
Network for applications  
rules in grid technology  
and operation
- Testing & Certification  
Institute

## Professional Education

- VDE Publishing
- VDE Conferences &  
Seminars
- VDE Academy

# Value proposition



- VDE is a globally recognized and trusted brand that stands for quality and independence
- We operate state-of-the-art PrimeLabs worldwide, which are accredited in accordance with ISO/IEC 17025
- We are passionate in supporting you over the entire battery development process right up to certification
- VDE has its own certification authority for fast processing
- Our engineers offer excellent knowledge and deep understanding in battery testing
- VDE is actively involved in the working groups for battery standards and is well informed about current and future developments



# Some of our valued partners



“We appreciate the exceptional quality and reliability of the VDE as part of our battery certification process.”



# VDE PrimeLabs

Battery Test Center, Offenbach | Germany



- > 1,800 m<sup>2</sup> testing area
- Unique testing possibilities
  - Electrical
  - Mechanical
  - Environmental
  - Abuse

# Our service portfolio

We offer tailored services for your needs



## Testing & Certification

- **Accredited testing** under DIN EN ISO/IEC 17025
  - Cells
  - Batteries
  - Modules
  - Battery packs
- **Tests accompanying development**
  - Performance and abuse tests on cells and batteries
  - Mechanical tests on batteries and modules
  - Testing on BMS
- **Tests and certification** according to international standards and regulations
- **Certification** conforms with IECCE CB Scheme

## Guidance & Training

- **Support** in creating test specifications
- **Consultation** of applicable standards and market access requirements
- **Training**, among others on
  - Hazards
  - Handling
  - Storage
  - Transport
  - Battery Standards
  - European Battery Regulation
- **Investigation** of accidents and forensic analytics





# Electrical testing



## Testing

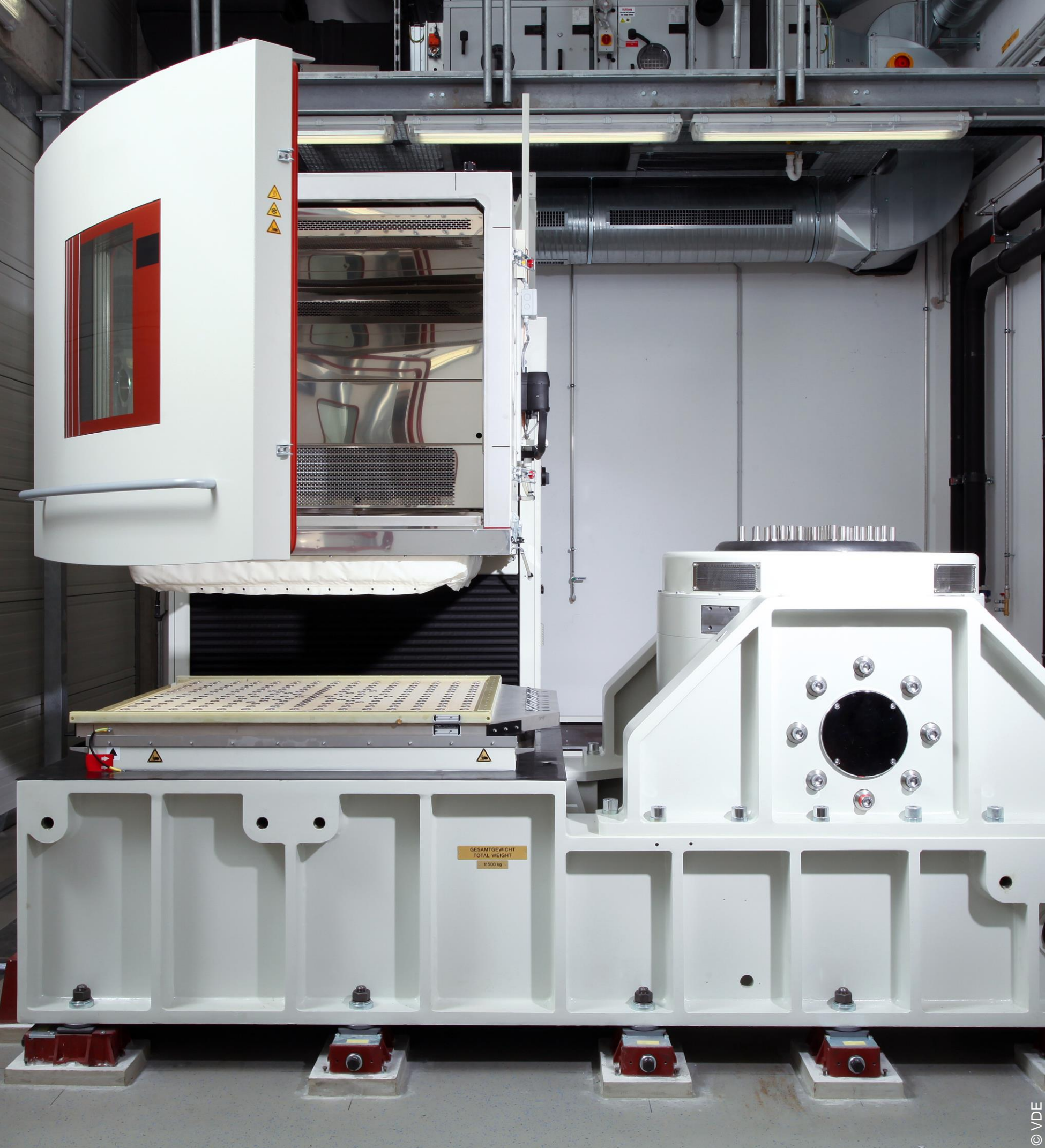
- Performance
- Cycle-life
- Calendar and thermal ageing
- EIS
- ISO resistance

## Equipment highlights

- More than 400 channels
  - Automotive cells: 100+ channels,  $I \geq 250$  A  
add. 960 channels,  $I = 120$  A from Apr 2025
  - Modules: 30+ channels
  - Battery packs: 8 channels
- Voltages from 0 V to 1 kV DC
- Currents up to 2,000 A
- Power rates up to 540 kW

**VDE** RENEWABLES -





# Mechanical testing



## Testing

- Vibration
  - Sine
  - Random
- Shock
  - Half-sine
  - Saw tooth
  - Rectangle

## Equipment highlights

- Shaker 120 kN
- 1.2 m x 1.2 m base
- 1,000 kg max. load
- With superimposed climate chamber





# Environmental testing



## Testing

- Altitude simulation (2.4 m<sup>3</sup>)
- Temperature shock and cycling
- Corrosion
- Ingress protection (IPxx)
- EMC
- REACh/RoHS

## Equipment highlights

- More than 20 temperature and climate chambers  
add. 80 temperature chambers from Apr 2025
- Up to 43 m<sup>3</sup>
- -70 °C to +180 °C
- Up to 18 K/min





# Abuse testing



## Testing

- Crush / Drop / Impact / Bend
- Nail penetration
- Internal and external short circuit
- Overcharge and overdischarge
- Overheat / Thermal abuse
- Fire propagation
- Battery forensics

## Equipment highlights

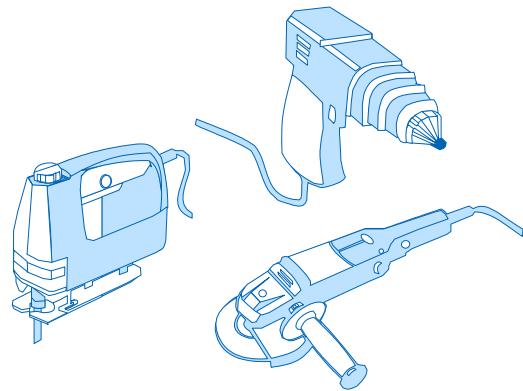
- 4 abuse chambers up to 20 m<sup>3</sup>
- Platforms with lowering function in water basins
- Automatic fire-fighting equipment
- Venturi gas scrubber



# Standards and Certifications

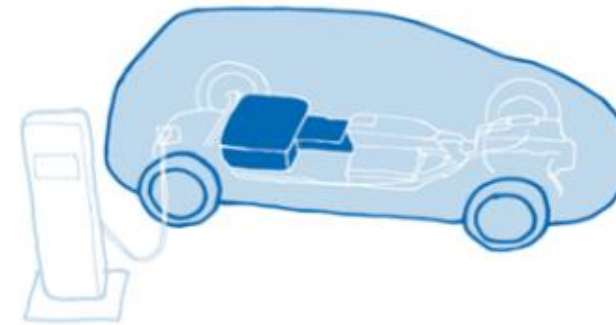


## Power Tools and Consumer Products



- UN 38.3
- IEC 60086-4
- IEC 60335-1 Annex B
- IEC 60335-2-107 Annex KK
- IEC 61960-3
- IEC 62133-1/-2
- IEC 62281
- IEC 62841-1 Annex K
- UL 2054 screening

## Automotive and LEV



- UN 38.3
- UN ECE R100 and R136 screening
- ISO 12405-4
- ISO 16750
- DIN EN 50604-1
- IEC 62660
- AK-LH 5.21
- LV 124
- UL 2271 screening

## Stationary Energy Storage Systems



- UN 38.3
- IEC 62619
- IEC 62620
- VDE AR 2510-50
- BVES Safety Guidelines
- UL 9540, UL 9540A screening

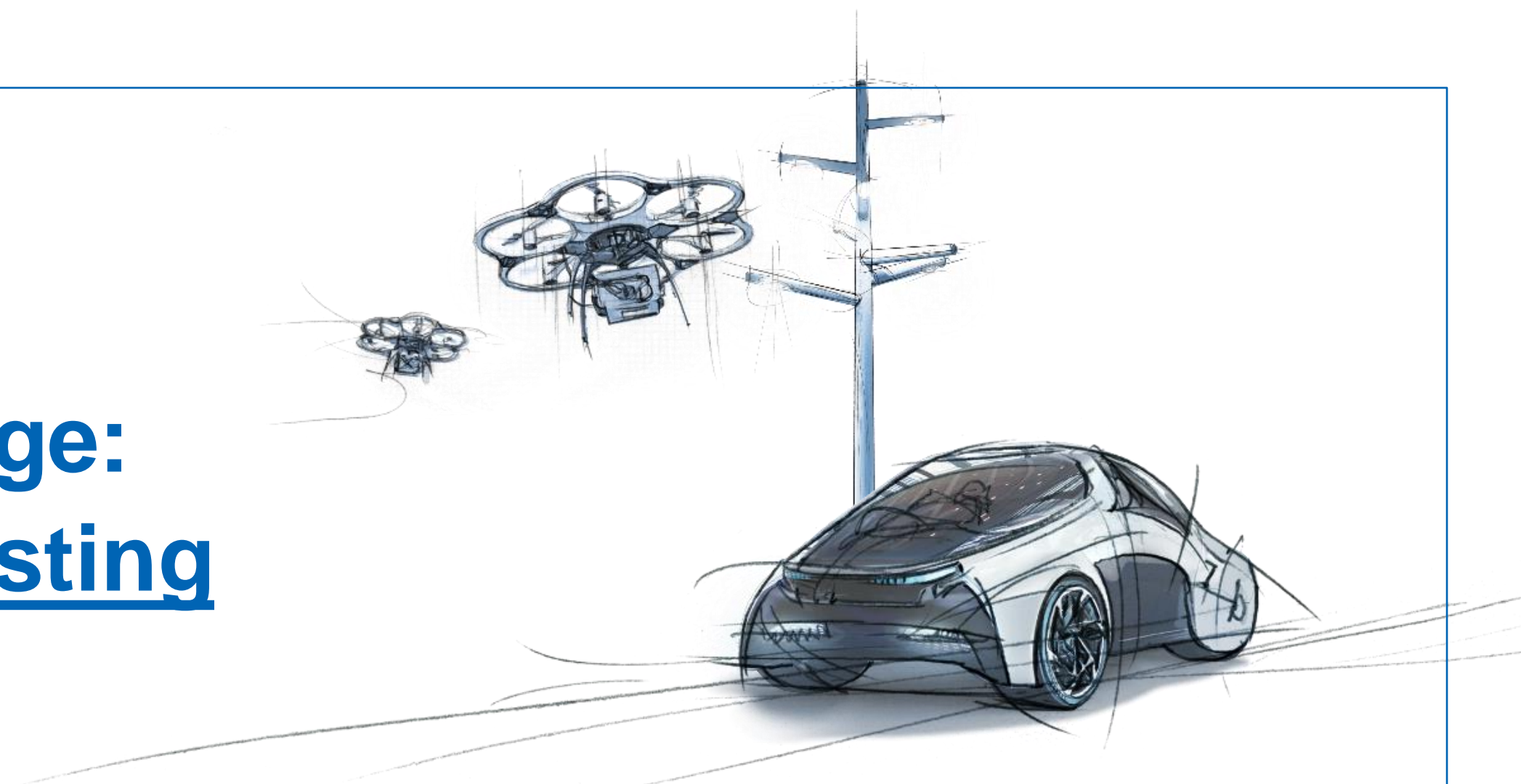
## Our certifications



- VDE mark, VDE GS mark
- VDE test report for information
- VDE statement of conformity
- CB certificate

Thank you for your attention!

**Please visit our homepage:**  
**[www.vde.com/battery-testing](http://www.vde.com/battery-testing)**



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