



Proventia EVA battery testing & R&D facilities

EVALUATE



VALIDATE



APPROVE

WINNER

TESTS IT ALL

How to ensure that batteries meet the requirements? By testing them!

Proventia has developed the EVA product family to cater to various needs in battery testing and R&D. Our product portfolio covers testing scenarios that span from battery cells to battery packs, from the development phase through to the production level, and ranges from performance and durability testing to misuse testing.

There are several winning factors that EVA products share:

Firstly, they are all modular, which makes them easy to set up either near your

existing facility to streamline testing processes, or a bit further on your site to ensure safety.

Secondly, EVA facilities are designed and built with hands-on testing experience, created by testing engineers for testing engineers. Our profound expertise in testing provides a solid foundation for making products that are truly efficient.

Thirdly, you can rely on the quality and scalability of our modules. For more information on the EVA product family, please refer to the following pages. We would be happy to tell you more, so give us a call!



Harri Kervinen

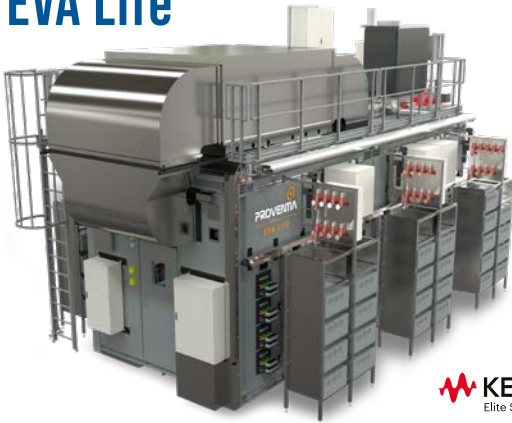
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Contact us

If you have any questions about our products don't hesitate to get in touch. Let us know by email or give us a call!

PROVENTIA EVA Life



KEYSIGHT
Elite Solution Partner

Performance & Lifetime Testing of Battery Cells

Flexible testing capability taking only third of a footprint compared to traditional testing facilities. Designed and built in collaboration with Keysight Technologies.

PROVENTIA EVA Climatic



KEYSIGHT
Elite Solution Partner

Climatic Battery Pack Testing

This state-of-the-art chamber includes the best features for environmental testing in the market! Developed in collaboration with Keysight Technologies.

PROVENTIA EVA Safe



Safety and Abuse Testing of Batteries

Play safe and run misuse tests for batteries with this fast to deploy, easy to set up and operate solution. Endures explosions even up to 2kWh.

PROVENTIA EVA Storage



Safe storage for batteries

Prevent incidents and lower the risks on your site with deep discharge and battery storing solution.

ACE INFRASTRUCTURAL AND
SAFETY AUTOMATION
BY PROVENTIA

Proventia ACE Guard is a customizable interface for managing the test facility's infrastructure and safety systems. It enables easy integration into customers' own systems.



PROVENTIA EVA Life

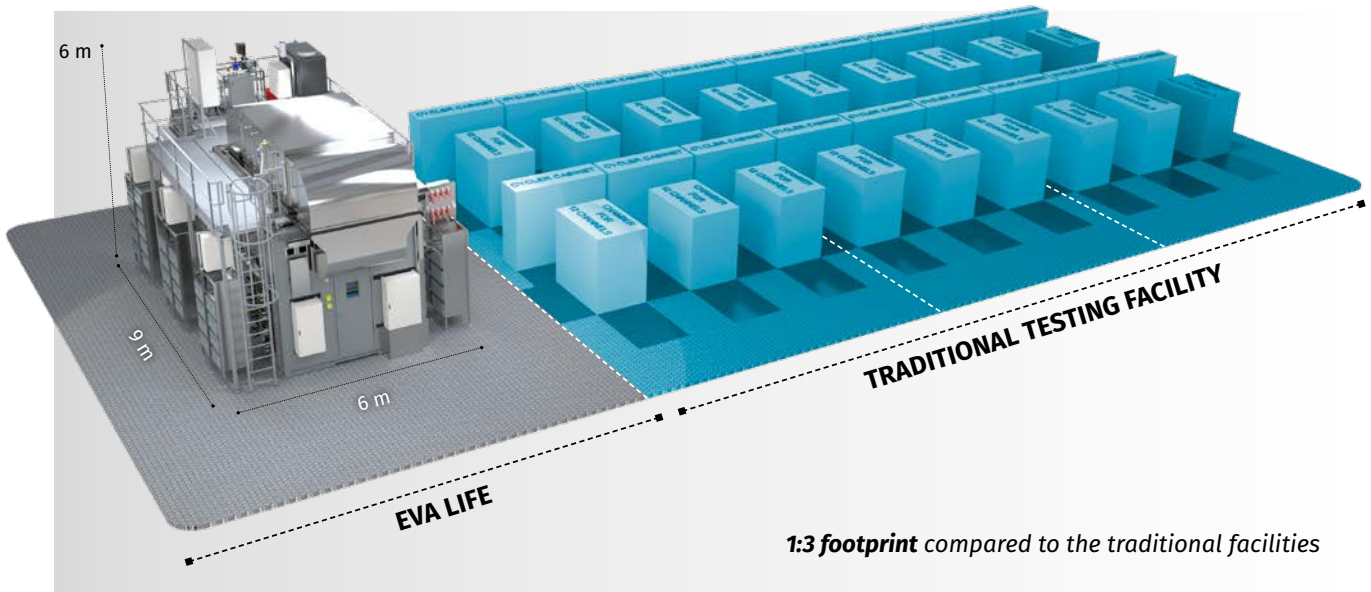
Test Module for Performance & Lifetime Testing of Battery Cells

Proventia EVA Life is a modular test facility solution for the performance and lifetime testing of production-level battery cells. Proventia EVA Life offers flexible testing capability, ensuring the performance, reliability, and safety of your battery cells. This truly turnkey test chamber is designed and built in collaboration with Keysight Technologies.

Compared to a traditional testing facility, Proventia EVA Life module saves time, with fast deployment and simultaneous individual cell

testing. In addition, it significantly saves space, operational resources and energy.

MAKE IT SIMPLE



FEATURES

Holds e.g. 200 channels for large prismatic cells or large pouch. Channels for cylindrical cells can also be added.

Environmental control system maintains a constant temperature between 20 and 40 °C with the accuracy of ± 2

Remote video monitoring of interior

Individual cell loading, control, and measurement with Keysight BT2200 Charge-Discharge, Li-ion Cell Formation, and Test Solution

Keysight PathWave Cell Cyclers Manager

OPERATIONAL CAPABILITIES

Operation per cell

- Independently programmable with its own start time
- Cycling procedure and measurement of voltage, current, capacity, temperature and direct current internal resistance

Fixture per cell

- Manually operated quick-loading, single-cell contactor
- Loading and unloading without disturbing the cycling on neighbouring cells
- Contactor adjustable for a range of cell sizes

STANDARDS AND DIRECTIVES

- Designed to European Machine Directive ISO 2006/42/EY

- Fulfils safety automation functions according to ISO 13849



INFRASTRUCTURAL AND
SAFETY AUTOMATION
BY PROVENTIA

- Fire detection and suppression
- Gas detection
- Remote video monitoring of test space and device under test

- Test cell ventilation
- Easy operation through touchscreen controls and remote access
- Extensive self-diagnostics for infrastructure and safety systems
- Utilises Beckhoff hardware with global support for parts and service
- Individual cell temperature monitoring



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EVA Climatic

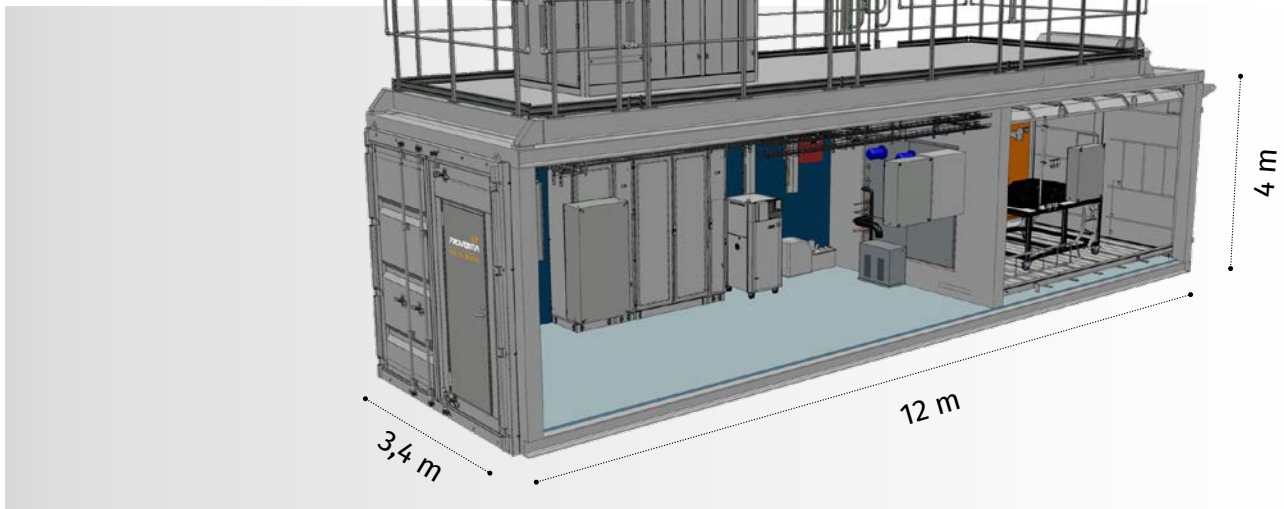
Module for Climatic Battery Pack Testing

Proventia EVA Climatic is the state-of-the-art test chamber for the climatic testing of battery packs and modules. EVA Climatic is developed in collaboration with Keysight Technologies. It delivers a location-independent and safe test laboratory with a rapid implementation and deployment time.

Modular EVA Climatic reduces investment time and costs with scalability that enables customers to choose from the right-sized test chambers. It offers a fast lane for increasing your battery testing capacity and accelerating the time-to-market of your battery products.

Proventia EVA Climatic modules enable real-world performance simulation, charging and discharging performance testing and the effects of temperature and humidity to be tested. The module can be located inside or outside a building.

ALL-IN-ONE



PERFORMANCE FEATURES

Cycler Power example

600 kW with 2xSL1740 from Keysight

Temperature range -40 °C – +80 °C

Temperature change rate 1-3 K/min

Humidity range 10–80 °C, 10–90% RH, +-5% RH

Includes Keysight SL1091A Scienlab Energy Storage Discover Software

Delivered with Keysight SL1740 Battery Test System

SAFETY FEATURES

Delivered standard as Hazard level 4

- Door access control
- Warning signals
- Fire detection
- Breather valve

Hazard level 6 option

- Burst Disc
- Fire suppression & gas detection
- Purge fan for gases

STANDARDS AND DIRECTIVES

- Designed to European Machine Directive ISO 2006/42/EY
- Designed to follow European fire regulation EI60
- Functional safety concept according to EN ISO 13849-1:2008 with performance rating up to Cat. 4, PL e



- Test cell door monitoring and access control
- Test cell operational mode and stack light control
- Fire detection and suppression
- Gas detection

- Test cell ventilation
- Remote video monitoring of test space and DUT
- Easy operation through touchscreen controls and remote access
- Extensive self-diagnostics for infrastructure and safety systems
- Utilises Beckhoff hardware with global support for parts and service



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EVA Safe

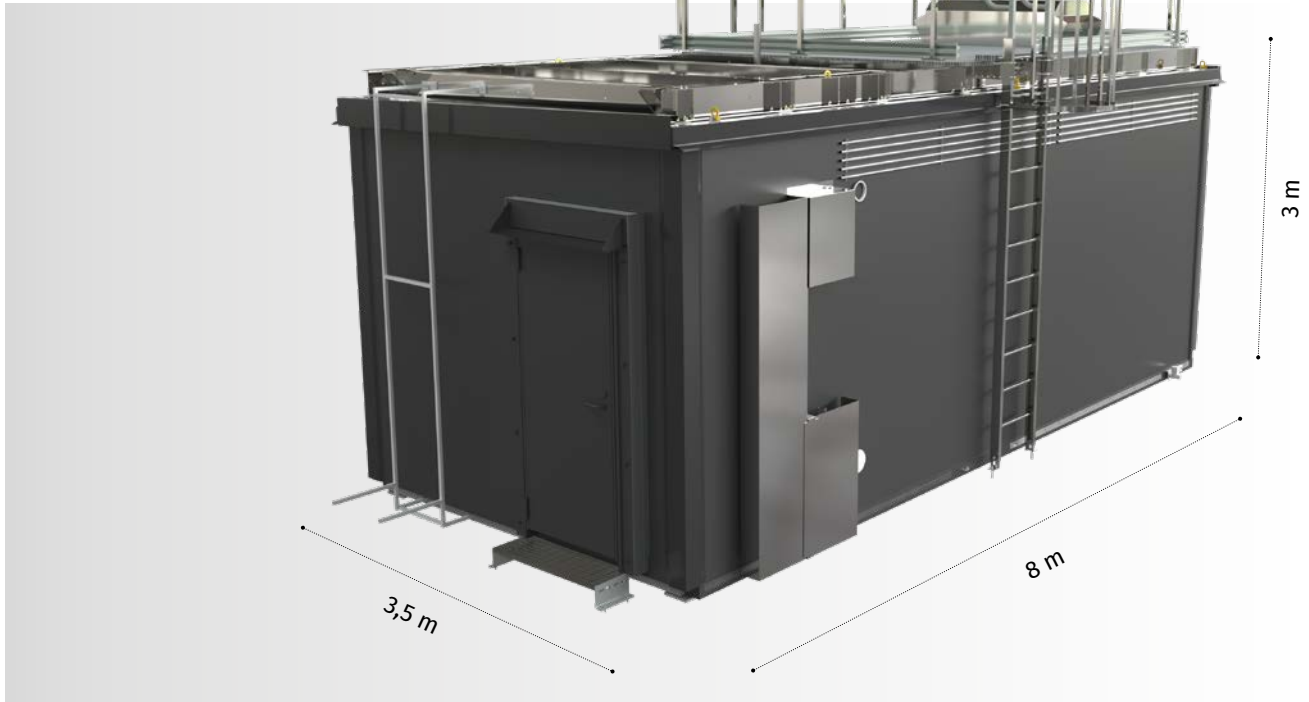
Module for Safety and Abuse Testing of Batteries

Proventia EVA Safe is designed to perform fire propagation, crushing, and other abuse tests like nail penetration in a safe and controlled space. EVA Safe is a modular compact test module, which makes it possible to locate it away from buildings and people. This helps to prevent any unnecessary risks related to people and property when doing misuse testing.

Proventia EVA Safe is fast to deploy and easy to operate. The test module does not need heavy foundations, a large number of interfaces, or internal preparations. The structural integrity of

EVA Safe is secured by stainless steel reinforced floors and walls that withstand a battery explosion of up to 2kWh in energy content based on a typical lithium-ion battery (NMC).

FAST AND EASY



OPERATIONAL FEATURES

- CCTV cameras with protective enclosures for monitoring the tests
- Constant removal of hazardous gases during the test
- Removal of small particles and gases in the HEPA filter
- Rupture disc with ceiling installation: in the event of an explosion, a gas release is directed safely upwards

STANDARDS AND DIRECTIVES

- Designed to European Machine Directive ISO 2006/42/EY
- Designed according to EI60 fire rating
- Fulfils safety automation functions



- Gas detection, extraction, and filtration for hazardous gasses
- Test cell status lights and emergency stop monitoring
- Status display and touchscreen control for the ventilation unit
- Touch screen control and alarms of the gas detection system
- Communication with the site alarm system
- Remote connection and data storage for cameras inside the test cells
- Utilises Beckhoff hardware with global support for parts and service.
- Manually released aerosol fire suppression system as an option

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EVA Storage

Module for safe storing of batteries

Proventia EVA Storage is the most comprehensive solution for storing batteries and deep discharging of battery packs and modules. When you need the best solution to store your batteries with all the necessary safety features that prevent incidents and significantly lower the risks, Proventia EVA Storage is your choice. It offers a safe space away from buildings and operational personnel.

Proventia EVA Storage is easy and fast to deploy because it does not need a heavy foundation, and its safety system can be integrated easily with any existing customer's safety and fire alarm systems.

Choose the size of the storage and the optional features and keep your batteries, packs and modules safe at a steady temperature no matter where you are.

PERFORMANCE FEATURES

Battery storing racks with shelves integrated, maximum storage masses:

- 8,000 kg / Medium
- 16,000 kg / Large

Available as an option:

Deep discharging of battery packs and modules for transportation and safe recycling of battery materials

SAFETY FEATURES

- Metal-wool-metal insulation elements, 3 mm steel plate floor, CO & CO₂ detection, fire detection system (includes heat and smoke detectors)
- Salgrom X aerosol fire suppression system
- Door open/closed detection sensors
- Also available as an option: water mist or sprinkler system

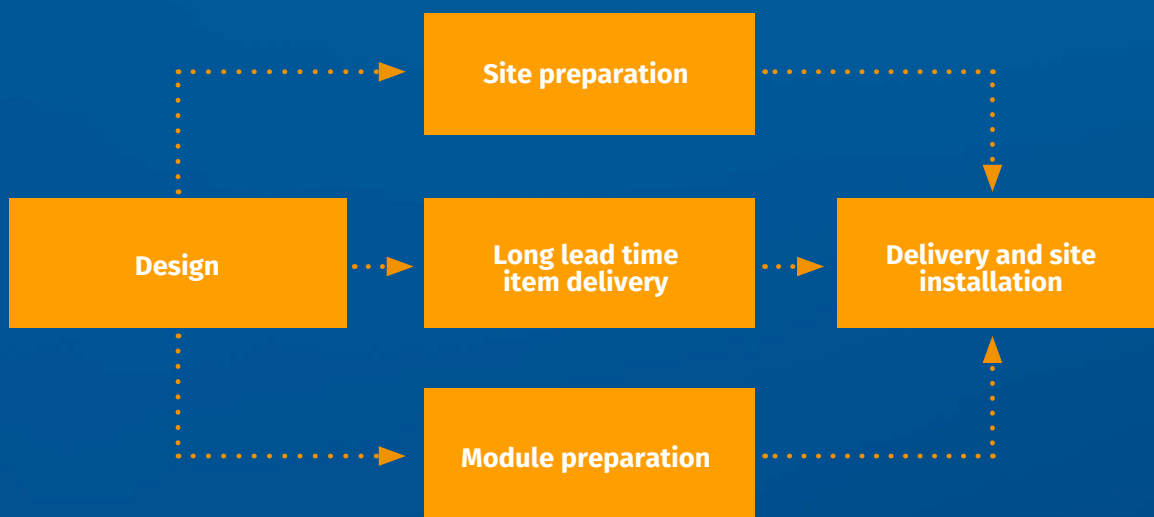
STANDARDS AND DIRECTIVES

- Designed to European Machine Directive ISO 2006/42/EY
- Fulfils safety automation functions according to ISO 13849



WHY PROVENTIA BATTERY TEST FACILITIES?

EVA Battery Testing Facilities offer compact and fast-to-deploy solutions for industries such as automotive, industrial, and the grid sectors. All EVA products are designed according to industry safety and performance standards. They represent the fastest way in the market to increase battery development, testing and storage capacity.





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