VISPIRON SYSTEMS

HIGH-VOLTAGE LABS

TESTING & VALIDATION OF POWER ELECTRONICS.

Greater Performance

Improved Quality

Increased Lifetime

Customized Tests for Power Electronics.

Since 2010, we have been dedicated to the electrical validation of next-generation drive electronics and charging technology – offering a complete solution from a single source. From planning, specification, execution, and automation of test cases to fault analysis, we are your reliable and experienced partner.

As experts in development and testing services, we take full responsibility for the complete validation process. This includes comprehensive support for test item qualification, customized adjustments, and precise configurations tailored to your needs.

Leveraging our expertise, we make a significant contribution to the sustainability of energy and mobility solutions. The insights gained from our testing processes lead to improved performance and efficiency of your components.

We look forward to handling your test cases.

Manuel Kroh
Senior Business Development Manager

Phone +49 176 15297008
manuel.kroh@vispiron.de

Increasing cost pressure and a rising number of variants require goal-oriented and precise test planning and execution.

What we provide:

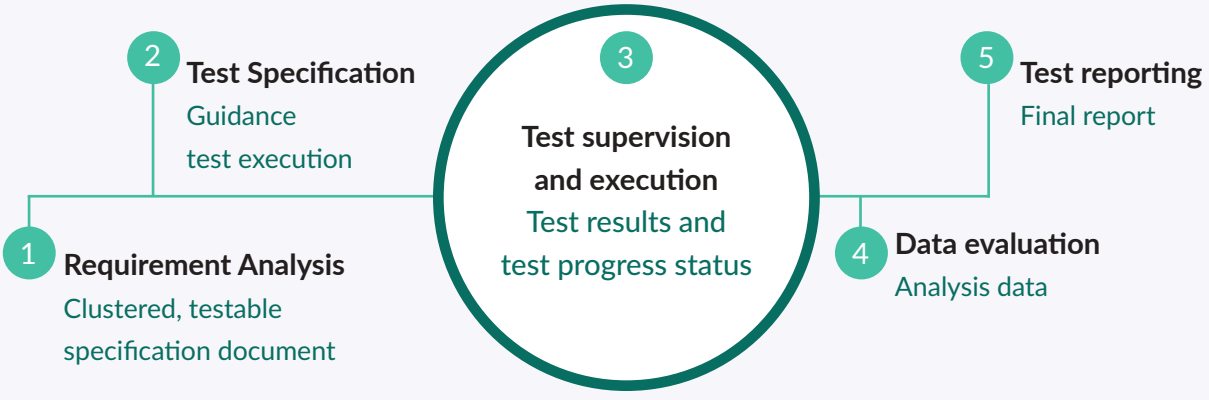
- Test planning and management
- Specification of test cases
- Automation of test cases on the test bench
- Execution/supervision
- Error analysis and tracking
- Problem management

What we test:

- Power electronics/Inverter
- Charging technologies
- LV-123/HV validation
- LV-124
- Environmental and lifetime qualification
- EMC emission and immunity

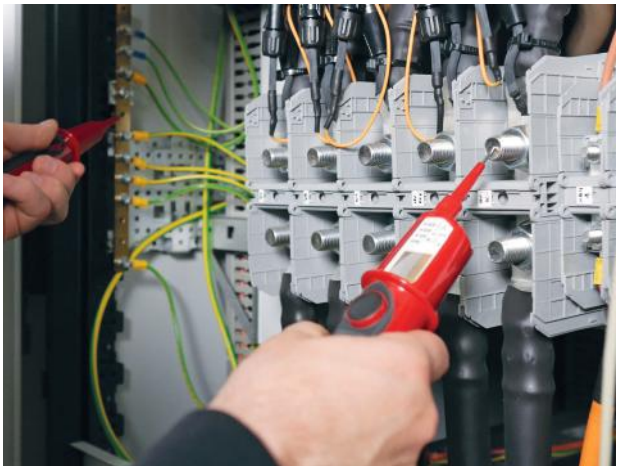
We support you in realizing your individual requirements by accompanying you throughout the entire testing process—from requirements analysis to final test reporting, as well as from system-level testing to individual component testing.

VISPIRON SYSTEMS Testing process



Maximum Flexibility for Maximum Success.

Thanks to our collaboration with selected testing laboratories, we can flexibly adjust our capacities to meet specific customer requirements.



8 Testing Stations, 5 Test Systems – Countless Variations.

Our test environment is fully customizable, providing a high degree of flexibility to meet your specific requirements.

1 250 V	900 A	3-/6 Phase	1 040 A
Battery voltage	Amperes phase currents	Configurations	DC current

Thanks to the customizable design of our test environment, various test specimens and test runs can be flexibly combined.

The tests are conducted in our high-voltage-safe test stations, which are equipped with INCA measurement systems.

Depending on specific test requirements, the implementation includes simulations of diverse environmental conditions, such as humidity.

Measurement technology, diagnostic tools & protocols:

- Thermographic imaging
- HV voltage/current
- LV voltage/current
- Standby current
- INCA
- CANalyzer
- CAN-XCP
- LIN
- Flexray
- CAN/CAN-FD

Specification of Our Test Stations.

Test Stations	1 Power HIL	7 System test stations

Test Specimen Environment

	Climate chamber	Temperature Control
Quantity	5	8 Channels
Temperature range	-70 °C to +120 °C	-40 °C to +90 °C
Cooling capacity	up to 5 kW	up to 51 kW
Flow rate	-	22 L/min
Volume	1 000 - 1 500 L	–
Humidity control	10% to 98%	–
Temperature gradient	-6 K/min	–
	+8 K/min	

Battery Simulations (HV)

HVDC-voltage	up to 1 250 V
Circulating current	up to ±1 440 A
Continuous current	up to ±1 040 A
Dynamic	up to ±700 V/ms
Functions	CC, CV, CR, CP, Ri-Sim, function generator up to 10 kHz

E-Machine-Emulator (HV)

Electrical rotational speed	1 250+ Hz
Number of phases	1 x 3 phases/ 1 x 6 phases/ 2 x 3 phases
Multilevel Operation	3-Level
Phase current	to 900 A during continuous operation/ to 1 080 A at 1 s
Rotor emulator	up to 130 A
Rotor position sensor	AMR/GMR and Resolver

Active Stator Load (HV)

Electrical rotational speed	200+ Hz
Number of pole pairs	1 to 25
Number of phases	1 x 3 phases/ 1 x 6 phases/ 2 x 3 phases
Phase current	to 500 A during continuous operation/ to 700 A at 60 s
Rotor position sensor	AMR/GMR and Resolver
Switching frequency	4 to 14 kHz

Specification of Our Test Stations.

Battery simulations (LV)

	Battsim LV (1)	Battsim LV (2)
Voltage	-20 V to 80 V	0 to 80 V
Current	±40 A permanent	±676 A permanent
	±75 A for 200 ms	
Functions	highly transient voltage profiles, superimposed AC voltage	CC, CV, CR, CP, Ri-Sim, functions generator to 10 kHz
Bandwidth	up to 150 kHz unrestricted	–
	up to 250 kHz (40 Vpp max.)	
Dynamic	–	voltage 0% - 90%: to 22 µs
		current -90% - 90%: to 70 µs

Sensor/Residual Bus Simulation

Residual Bus

- CAN/CANFD
- Flexray
- LIN
- SENT

DACs

- channels up to 18 x isolated
- output voltage up to ±10 V
- output current up to ±20 mA
- dynamics up to 2 µs
- functions: DC, Sinus, Pattern up to 1 µs

Fault simulations

	FIU HV
Channels	6 x AC-lines
	2 x DC-lines
Functions	Phase short circuits
	Line interruption (AC/DC)

Ripple Generator (HV)

- Frequency range: 0 to 300 kHz
- Current: up to 400 App
- Power: up to 8 kVArms
- Artificial network according to ISO 21498

	FIU LV
Channels	8 x Power channels (30 A, 60 V)
	60 x Signal channels (2 A, 60 V)
	8 x Differential channels (2A, 60 V) optimized for different. signals e.g. CAN
	2 x Fast Interrupter (1 x 2 A, 1 x 40 A)
Functions	Fast line interruption (10 µs switching edge) interruption patterns, e.g. loose contact
	Short circuits to GND, to Ubat, and between channels
	Automated connection of equipment (e.g. electronic load, multimeter, oscilloscope, etc.)

Technical Information about Existing Sensor Technology.

Measurement variable	Measurement range	Accuracy	Measurement type /information	Sampling frequency
Ambient temperature	-70 to 180 °C	0,5 K	-	1 Sa/s
Ambient humidity	10 to 98% r.F.	±3 %	psychrometric humidity measurement with forced-wetted self-cleaning wet-bulb temperature sensor	-
Coolant temperature	-40 to +250 °C	0,5 K	Pt100	1 Sa/s
Coolant flow rate	0,2 to 30 L/min	1% v.M. at > 2 L/min	Magnetic-inductive flow measurement	1 Sa/s
LV voltage	±30 V	25 mV (0,2 % v.M)	differential, isolated	up to 1,2 MSa/s
	±48 V	6 mV		up to 100 kSa/s
	±100 V	20 mV		

Measurement variable	Measurement range	Accuracy	Measurement type /information	Sampling frequency
HV voltage	0 to 1 200 V	0,02% v.E.	differential, isolated	up to 100 kSa/s
LV currant	1 µA to 100 A	1% v.E.	Shunt with automatic range switching	up to 125 kSa/s
AC currant	±3 000 A	1% at 1 000 A	Hall effect sensor	up to 25 kSa/s
DC current	±1 800 A	1% at 600 A	Hall effect sensor	up to 25 kSa/s
AC/DC current alternative	±1 000 A	0,0054%	Hall effect sensor	up to 100 kSa/s
Excitor current	±75 A	1% at 25 A	Hall effect sensor	up to 25 kSa/s

This table represents the standard parameters; the measurement technology can be expanded at any time to meet specific requirements.

VISPIRON SYSTEMS

Joseph-Dollinger-Bogen 28
80807 München

Your contact
Manuel Kroh
Senior Business Development Manager

Tel +49 176 15297102
manuel.kroh@vispiron.de

Competent implementation of individual tests:

Requirements Analysis

- analysis of the product specifications
- requirement assessment and coverage

Test Specification

- creation of test specifications
- test preparation and planning
- development of test strategies
- consultation on sample phase test scope
- planning of milestones in the coverage scope

Test Execution

- test status for all test clusters
- performance of electrical tests
- empowerment of test samples on the test system

Data Evaluation and Reporting

- summary of partial results from the test clusters
- plausibility check of results
- analysis and evaluation of test results
- preparation of test reports