ES

SPEKTRA
Ready for TESTelligence!

ES | Engineering Solutions

Edition 10-2018

Target **oriented Solutions**

SPEKTRA Representatives

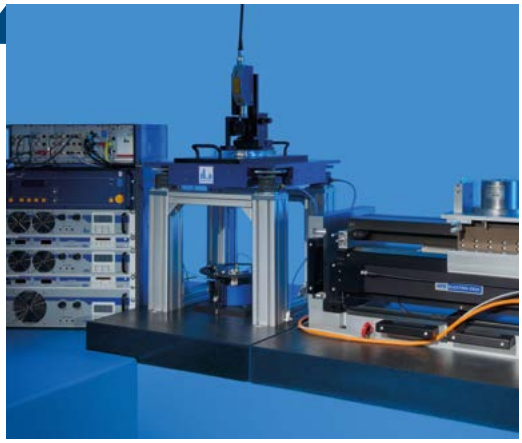
Who we are.

In **1994** three engineers employed at a successor of former state-owned VEB Robotron Messelektronik Dresden - Department of sound, vibration and force measurement were dissatisfied with the progress of the enterprise. Willing to seize the opportunities provided by the new dynamic economy of a reunified Germany, they decided to launch their own business, **SPEKTRA Dresden, Germany**. It all started with the development and manufacturing of a final test system for the production of the first generation of MEMS-based airbag sensors. In 2008 SPEKTRA joined forces with the renowned manufacturer of long-stroke shakers **APS Dynamics, USA** to extend the product portfolio and strengthen the international sales force. Since then SPEKTRA has developed into a stable, mid-sized enterprise in the field of testing, calibration and characterization of sensors for the measurement of dynamic mechanical quantities. With expertise in mechanical, electrical and software engineering, SPEKTRA develops target-oriented, customized solutions that address the challenges of laboratory and volume production applications.

Our Portfolio

CS Calibration Solutions

SPEKTRA supplies calibration systems based on our own research and development. Our premium products are valued in national metrology institutes as well as in industrial calibration laboratories.



Our solutions cover the following ranges:

- ✔ Vibration frequencies: 0 Hz … 200 kHz
- ✔ Shock accelerations: 20 m/s² … 2 000 km/s²
- ✔ Acoustic excitation: 0.1 Hz … 20 kHz

DT Device Testing

SPEKTRA device testing tools are used for full-scale characterization of your products. In addition to checking the main function during the characterization, the impact of environmental influences is also determined and a large number of relevant electrical tests are performed.

Testing parameters include amongst others:

- ✔ Electrical characterization of sensors
- ✔ Vibration, shock, acoustics
- ✔ Pressure, magnetic flux, rotation

ST Structural Testing

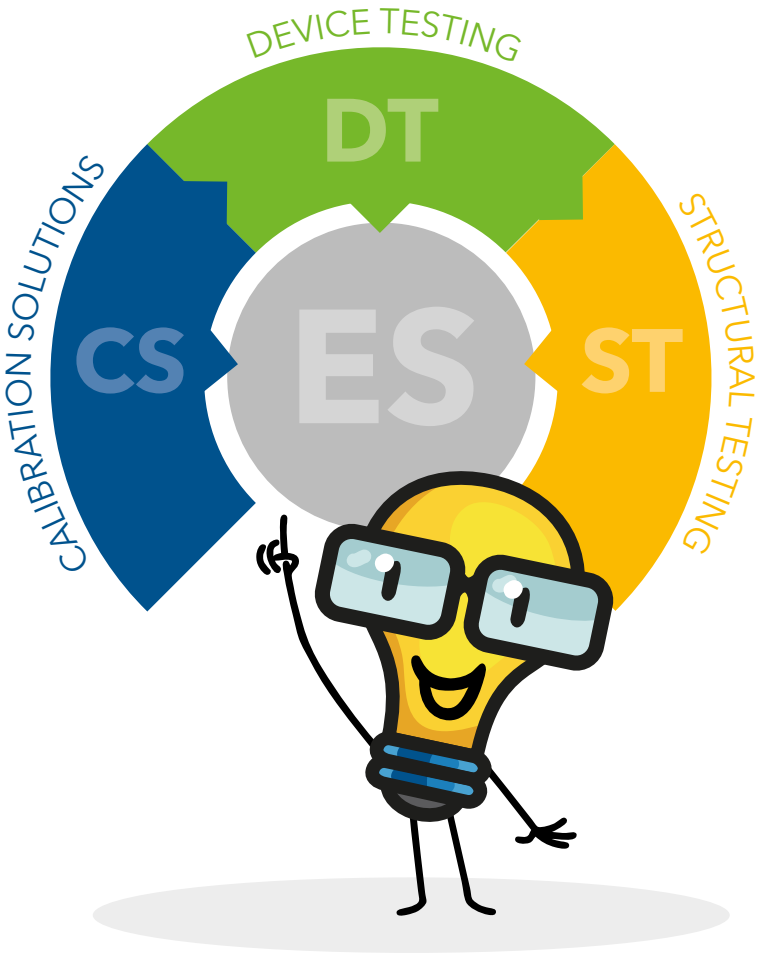
Benefit from 45 years of experience in modal excitation and tap into the combined know-how from SPEKTRA and our brand APS.

The well known long-stroke exciters may be applied to:

- ✔ Modal testing of large structures
- ✔ Fatigue tests
- ✔ Seismic simulation

ES Engineering Solutions

Based on our extensive product portfolio in the measurement and testing technology SPEKTRA is able to offer complex product solutions that are customized to meet your individual demands. Benefit from the technical know-how of our engineers and contact us with your specific challenge.



Our Expertise

- Mechanical design
- Electronics design
- Software design
- Calibration, characterization, measurements

Your Benefits

- High quality standards (ISO 9001, DAkkS ISO 17025)
- Wide range of modular standard products
- Flexible customized solutions tailored to suit your specific demands

Your

INDIVIDUAL TASKS

Laboratory Use and Testing

Characterization of sensors and small assemblies e.g. regarding

- ✔ Vibration immunity
- ✔ Mechanical shocks
- ✔ Rotation excitation
- ✔ Magnetic fields
- ✔ Temperature changes

Low / Medium Volume Production

Production testing tasks regarding

- ✔ End-of-line testing of sensors or small assemblies
- ✔ End-of-line calibration / adjustment of sensors
- ✔ Quality checks of random production samples

High Volume Production

Production testing tasks regarding high volume production of

- ✔ Sensors
- ✔ Sensor clusters
- ✔ Electronic components

CUSTO
TURNKEY

meet

INNOVATIVE SOLUTIONS

Exciters

- Vibration (0.1 Hz ... 200 kHz)
- Shock (up to 2 000 km/s²)
- Magnetic flux generator (DC or AC)
- Temperature (-60°C ... +180°C)
- Rotation

Turnkey Solutions

- Solutions for low / medium volume production and laboratory use
- Exciters, measurement electronics, software from one source
- One-stop-shop from design to installation

Subsystems

- Versatile, cost-efficient tester electronics for sensors
- Flexibly configurable digital interfaces (SPI, I²C, SENT, CAN, LIN, ZACwire, et al.)
- Tester per DUT architecture allows high parallel operation
- Scalable from desktop laboratory system to x-hundred channel subassembly for production test cells

MIZED
SOLUTION

Test Bench for Acceleration Sensors

Task: End-of-Line-Test of Sensors in Production including

- Test system for low / medium volume production of sensors
- Measurement of sensor frequency response via random noise (10 Hz … 10 kHz)
- Overload test by mechanical shocks (500 m/s² peak) on the same shaker
- Recording of test data
- Automatic check if sensor response stays within defined limits pass / fail result
- Manual operation - high safety standards

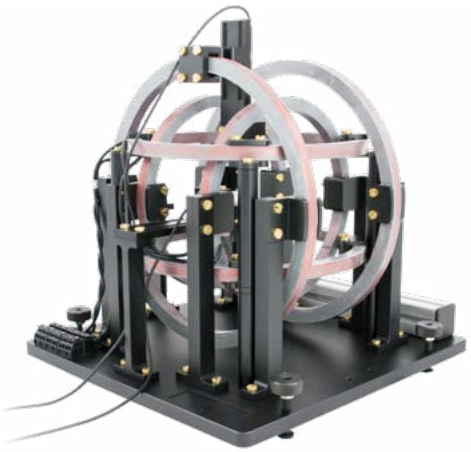
Input of SPEKTRA

- Consulting and feasibility tests during sensor development phase
- Mechanical modification of a standard SPEKTRA exciter SE-10 for the special test task (vibration and hard shocks on one shaker)
- Design of a customized test software based on a standard SPEKTRA VCS 401 vibration controller hard- / software
- User interface for minimized operator intervention (DUT identification by barcode scanner, automated pass / fail checks, automated protocol file storage)

Result

- Turnkey solution test bench according to customer specification

Magnetic Excitation in Climatic Chamber



Task: Test System for MEMS Compass Modules

- Requires magnetic flux generator for any spatial direction
- Accuracy of magnetic field vector with respect to sensor axis at least ±1°
- Earth magnetic field cancellation ≤ 1 µT
- Maximum magnetic flux up to 3 mT
- Homogeneity of flux ≤ 1 % within a volume of 64 cm^3
- Temperature range -75°C ... +180°C
- Digital communication with device under test (DUT)

Input of SPEKTRA

- Design of a 3D-Magnet-Unit according to specification
- Integration into a climatic chamber
- Sensor tester electronics with flexibly configurable digital interfaces (SPI, I^2C, CAN, et al.)
- Software solution for control of flux generator
- Software solution for data exchange with the MEMS compass modules by means of the sensor tester electronics

Result

- Customized test solution for research and development

Acceleration Calibration under Temperature

Task: Traceable Determination of Temperature Sensitivity in a wide Frequency Range

- Calibration with sine excitation in a frequency range 10 Hz ... 10 kHz
- Temperature adjustable in a range -60°C ... +120°C during the calibration
- Calibration traceable to a national standard
- Calibration data must be recorded according to laboratory standard ISO 17025
- Installation and training at customer site

Input of SPEKTRA

- Customized calibration system based on a standard SPEKTRA calibration system CS18 MF
- Integration of the vibration exciter into a climatic chamber
- Development of a traceable calibration method for the reference accelerometer
- Customized calibration software for all automatic operation - software controls temperature and vibration excitation
- Installation and training at customer site

Result

- Turnkey calibration system for a special calibration task

Contact us

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