PRODUCT PORTFOLIO
TEST AND MEASURING SYSTEMS

- Quality made in Germany
- Standardized and customized solutions
- Turn key projects, all from one hand
**AC TEST SYSTEMS**

**TRANSFORMER BASED SYSTEMS 50/60 HZ FOR GENERAL APPLICATION**

- **WP with PEOI**
  - Insulating case transformers
  - For testing cables and power transformers
  - Compact size

- **WP with PEO**
  - Transformers in steel tank
  - For higher power applications
  - Continuous operation

- **WP G and WPG G**
  - Oil or SF6 insulated transformers
  - For GIS/GIL testing
  - Winding temperature monitored

**RESONANT TEST SYSTEMS WITH FREQUENCY CONVERTER**

- **WRV G and WRV T**
  - Steel tank HV reactors
  - For testing HV cables on site or for submarine cables in factory
  - Use of multiple systems for long cables

- **WRV M and WRVG G**
  - Oil or SF6 insulated HV reactors
  - For testing GIS and short cable testing
  - Directly flanged to test object
  - Factory and on-site use

**RESONANT TEST SYSTEMS 50/60 HZ FOR HIGHER POWER**

- **WRM**
  - Modular HV reactors
  - For testing capacitors, MV cables and generators
  - Parallel and series connections

- **WR**
  - Steel tank HV reactor
  - For testing MV and HV cables
  - Internal tap changer for optimum power adaption

- **WRU**
  - Insulating case HV reactors
  - For testing GIS and transformers (applied voltage)
  - Compact size, low weight
  - Factory and on-site use

**TEST SYSTEMS WITH FREQUENCY CONVERTER FOR TRANSFORMER TESTS**

- **HVCC capacitor bank**
  - For testing power transformers up to 2000 MVA and shunt reactors
  - Mobile and stationary use

- **DITAS**
  - For testing distribution transformers up to 400 kVA
  - Mobile and stationary use
  - Fully automated system available

**HIGH CURRENT TEST SYSTEM**

- **HCTS**
  - Fixed or hinged core transformers
  - For testing MV/HV cables, connectors, switchgears, etc.
  - Integrated compensation

**HV MODULE TEST SYSTEMS**

- **HSBS module system**
  - AC, DC and impulse voltage
  - Highly flexible modular test system setup
  - For student education

**TECHNICAL PARAMETERS**

<table>
<thead>
<tr>
<th>Test system</th>
<th>Voltage ratings</th>
<th>Current ratings</th>
<th>Test power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformer insulating case (WP PEOI)</td>
<td>100...1000 kV</td>
<td>up to 1 A</td>
<td>up to 1000 kVA</td>
</tr>
<tr>
<td>Transformer metal tank (WP PEO)</td>
<td>60...1800 kV</td>
<td>up to 10 A</td>
<td>up to 6000 kVA</td>
</tr>
<tr>
<td>Transformer SF6 insulated (WPG G)</td>
<td>510...1050 kV</td>
<td>up to 0.76 A</td>
<td>up to 800 kVA</td>
</tr>
<tr>
<td>Resonant reactor, modular (WRM)</td>
<td>250...1800 kV</td>
<td>up to 12 A</td>
<td>up to 5000 kVA</td>
</tr>
<tr>
<td>Resonant reactor, tape changer (WRU)</td>
<td>6...620 kV</td>
<td>up to 500 A</td>
<td>up to 6000 kVA</td>
</tr>
<tr>
<td>Resonant reactor, tap changer (WRV T)</td>
<td>6...620 kV</td>
<td>up to 50 A</td>
<td>up to 15000 kVA</td>
</tr>
<tr>
<td>Resonant reactor system with variable frequency</td>
<td>6...620 kV</td>
<td>up to 50 A</td>
<td>up to 15000 kVA</td>
</tr>
<tr>
<td>For GIS testing (WRVG G)</td>
<td>400...750 kV</td>
<td>up to 1.9 A</td>
<td>up to 4 MVA</td>
</tr>
<tr>
<td>For transformer, GIS and short cable testing (WRV M)</td>
<td>160...600 kV</td>
<td>up to 10 A</td>
<td>up to 6 MVA</td>
</tr>
<tr>
<td>For HV cable testing (WRV T)</td>
<td>110...220 kV</td>
<td>up to 500 A</td>
<td>up to 210 MVA</td>
</tr>
<tr>
<td>For MV cable testing (WRV T)</td>
<td>25...500 kV</td>
<td>up to 25 A</td>
<td>up to 1000 kVA</td>
</tr>
<tr>
<td>AC high current test system for heat cycle testing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High temperature test system (HCTS)</td>
<td>up to 5000 A</td>
<td>up to 100 V</td>
<td>up to 1 MVA</td>
</tr>
</tbody>
</table>
**DC AND IMPULSE TEST SYSTEMS**

### DC VOLTAGE TEST SYSTEMS

- **GP**
  - High power DC test system
  - Extremely high voltage available
  - Continuous operation

- **FGP**
  - High power DC test system
  - Outdoor system for testing of outdoor HV equipment
  - Continuous operation

- **GPM**
  - Compact, powerful DC modules
  - Mobile and stationary use
  - Integrated HV divider

### IMPULSE CURRENT AND VOLTAGE TEST SYSTEMS

- **IP S**
  - For testing arresters, fuses, etc.
  - Low inductance design for optimum wave shape

- **IP L**
  - Low inductance design for optimum wave shape
  - Modular design for on-site testing

- **IP M**
  - Low inductance design for optimum wave shape
  - Modular design for on-site testing

- **IP G**
  - Low inductance design for optimum wave shape
  - Modular design for on-site testing

### CONTROL AND MEASURING SYSTEMS, ACCESSORIES

### MEASURING SYSTEMS

- **HIRES transient recorder**
  - Flexible hard- and software configuration
  - Manual and automatic measurements
  - Potential free probes available
  - Extremely EMI proof for exact results in harsh conditions

- **LiMOS transformer loss measuring system**
  - Load and no-load loss measurements
  - One compact unit containing voltage and current sensors
  - Disturbance free optical data transmission

- **PiDAS partial discharge loss measuring system**
  - Available for current, voltage, tan delta, PD, capacitance, etc.
  - Calibration traceable to national PTB standards
  - Available as reference measuring dividers

### ACCESSORIES

- **Connection Point**
  - For impulse test systems
  - Voltage divider, chopping gap and overshoot compensation in one device
  - Time and space saving

- **Dividers and shunts**
  - Available for current, voltage, tan delta, PD, capacitance, etc.
  - Calibration traceable to national PTB standards
  - Available as reference measuring dividers

- **HiRES Locator**
  - Breakdown location on-line or during HV testing
  - Cable lengths > 200 km
  - Applicable for all AC and DC cables

### AC induced voltage test system for transformers and reactor testing

<table>
<thead>
<tr>
<th>Test system</th>
<th>Voltage ratings</th>
<th>Current ratings</th>
<th>Test power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power transformer test system (WV + HVCC)</td>
<td>45...200 kV</td>
<td>up to 6 MW/500 MVA</td>
<td>2000 MVA</td>
</tr>
<tr>
<td>Distribution transformer test system (DITAS)</td>
<td>5 kV</td>
<td>up to 1000 kV/2000 MVA</td>
<td>5 MVA</td>
</tr>
</tbody>
</table>

### DC test systems

<table>
<thead>
<tr>
<th>Test system</th>
<th>Voltage ratings</th>
<th>Current ratings</th>
<th>Test power</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC system (conventional, GP)</td>
<td>200...2000 kW</td>
<td>up to 100 mA</td>
<td>up to 200 kW</td>
</tr>
<tr>
<td>Outdoor DC system (FGP)</td>
<td>400...1500 kW</td>
<td>up to 40 mA</td>
<td>up to 24 kW</td>
</tr>
<tr>
<td>DC module system (GPM)</td>
<td>400...1500 kW</td>
<td>up to 40 mA</td>
<td>up to 24 kW</td>
</tr>
</tbody>
</table>

### Impulse current test systems

<table>
<thead>
<tr>
<th>Test system</th>
<th>Current ratings</th>
<th>Charging voltage</th>
<th>Impulse energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impulse current test system (IP S)</td>
<td>up to 240 kA</td>
<td>up to 100 kV</td>
<td>up to 240 kJ</td>
</tr>
<tr>
<td>Impulse current test system (IP M)</td>
<td>1000...2000 kA</td>
<td>up to 100 kV</td>
<td>up to 500 kJ</td>
</tr>
</tbody>
</table>

### Impulse voltage test systems

<table>
<thead>
<tr>
<th>Test system</th>
<th>Cumulative charging voltage</th>
<th>Stage charging voltage</th>
<th>Impulse energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small impulse test system (IP L)</td>
<td>100...2000 kV</td>
<td>100 kV</td>
<td>up to 80 kJ</td>
</tr>
<tr>
<td>Medium impulse test system (IP M)</td>
<td>1000...2000 kV</td>
<td>2 x 100 kV</td>
<td>up to 80 kJ</td>
</tr>
<tr>
<td>Large impulse test system (IP G)</td>
<td>2000...4000 kV</td>
<td>2 x 100 kV</td>
<td>up to 80 kJ</td>
</tr>
</tbody>
</table>

### Control system HiCOS

- Unified control system for all HV test systems
- Integrated safety system
- Measurements of all tests in one protocol
- Integrated data base

### Cable end termination system

- Used as PD free cable end termination during HV tests
- Automatic water conditioning unit

### Shielded room

- Low background noise level for sensitive PD measurement during HV tests
- Various sizes available
  - Including ventilation, air conditioning, control rooms, air cushion floor, etc.
**SUPPORT AND SERVICE**

**CONSULTANCY**
- Analyzing of test requirements
- Test field layout
- Shielding and earthing recommendations
- Safety concept
- Cable routing
- Design of control and measuring systems
- Supervision of construction works
- Turnkey solutions

**UPGRADES**
- Extending life cycle of HV components by exchange of control system
- Examination of aged systems
- Upgrades of control and measuring systems for HIGHVOLT and third party systems
- New automation features for test, measurement and evaluation of results for time saving procedures
- Upgrades of technical parameters for HIGHVOLT systems

**CALIBRATION**
- DAkkS accredited in-house calibration lab
- Traceable to national PTB standards
- For voltage, current, power, capacitance, etc.
- Calibration services available at our facilities and worldwide
- Reference measuring systems used by several national laboratories

**TUTORIALS AND TRAINING**
- Sharing knowledge
- In-house and external tutorials
- Hands-on operator training as part of each system’s commissioning
- Covering general HV techniques, test objects and test voltages, the practical side of test and measurement, test data evaluation, fault diagnosis, addressing specific questions, etc.
- Adapted topics as per customer request

**MAINTENANCE**
- Systems designed for low maintenance effort
- Necessary maintenance clearly described
- Complete documentation
- Scheduled or usage-dependent maintenance plans available
- Can be combined with regular calibration visits
- Spare parts readily available, controls based on Simatic S7 modules

**SERVICE AND REPAIR**
- Systems have high reliability
- HV components usually tested at 120 % of rated voltage before delivery
- Built-in remote diagnostic module in most systems
- Telephone and on-line service to solve most problems within few working days
- Large team of specialists available for immediate on-site assistance

For further information please contact:

HIGHVOLT Prüftechnik Dresden GmbH
Marie-Curie-Straße 10
01139 Dresden
Germany

Phone +49 351 8425-700
Fax +49 351 8425-679
E-mail sales@highvolt.de
Web www.highvolt.de