

## aixPES

### Piezoelectric Evaluation System (aixPES)

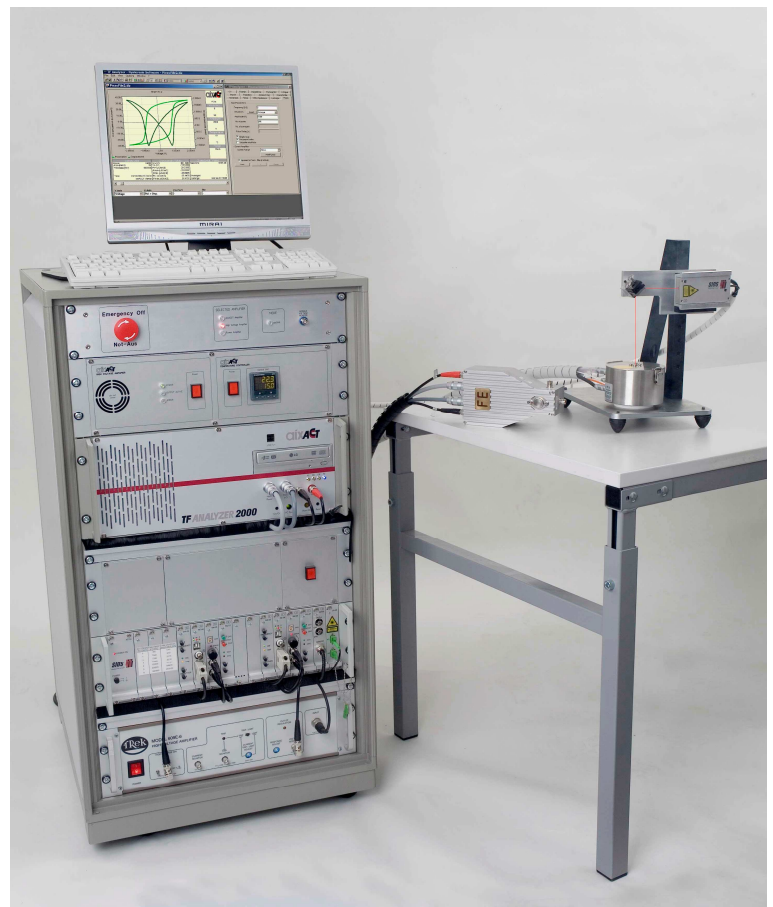
This system is used for comprehensive electrical and electro-mechanical characterization of piezoelectric bulk ceramic samples. Large and small signal material characteristics can be evaluated over a wide temperature range. The samples current response is measured by applying an electrical voltage excitation signal using the flexible and precise virtual ground method. The samples displacement is simultaneously measured with an laser interferometer system.

#### ■ Application

- Material characterization for research and development
- Device qualification
- Large and small signal measurements
- Temperature dependent measurements
- Reliability and fatigue tests
- Leakage current measurements

#### ■ Highlights/Benefits

- One system for comprehensive evaluation of piezo- and ferroelectric bulk ceramic materials e.g. for sensor and actuator devices
- One software for external hardware control (e.g. temperature controller, high voltage amplifier, displacement sensor, oscilloscope) and data acquisition
- Remote access and script control available
- Optional database connection (ODBC) for easy access on material / device characteristics
- Adaption to customers' hardware and customer specific requirements
- Update service
- User support



## aixPES

### ■ Features

#### 1. Supported hardware

- Internal and external high voltage amplifier (+/- 100 V up to +/- 10 kV)
- Sample holder for bulk ceramic samples
- Temperature controller and temperature chambers
- Displacement sensors (e.g. laser interferometer, capacitive, or inductive)
- External lock-in or impedance bridge

#### 2. Measurements

- Large signal electric polarization and displacement (uni- & bipolar)
- Small signal capacitance, loss tangent, and piezocoefficient vs. uni- and bipolar DC bias voltage
- Temperature dependent studies of electrical and electro-mechanical characteristics
- Pyroelectric measurements
- Leakage current measurements
- Fatigue measurements
- Impedance measurements
- User defined excitation signals

#### 3. Software

- Windows 2000/XP operating system
- Remote access and script control via GPIB or Ethernet
- Database connection via ODBC interface
- Measurement data export to ASCII
- Measurement data exchange with aixPlover software and Resonance Analyzer

### ■ Specifications

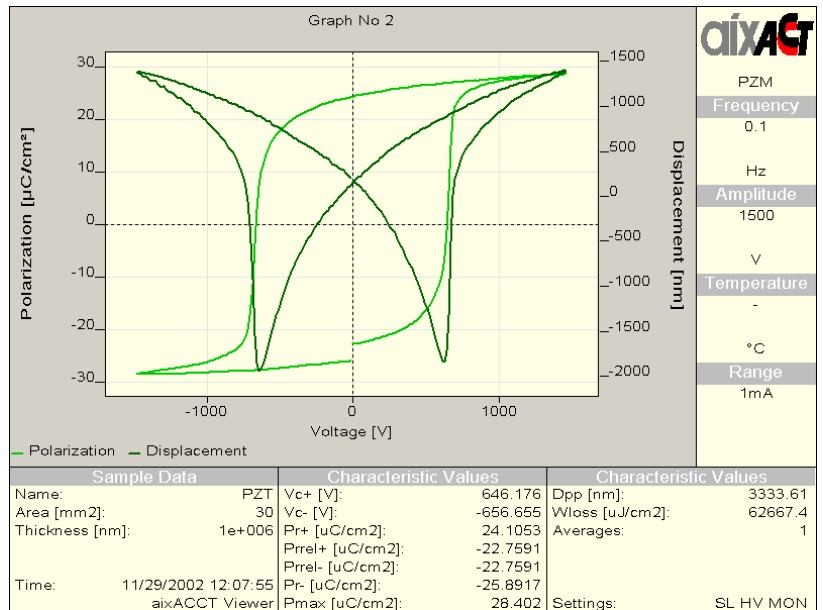
- All components of the aixPES set-up comply with part 15 of the FCC rules
- Detailed specifications and overall performance are strongly dependent on the integrated single components

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### ■ Sample Measurements

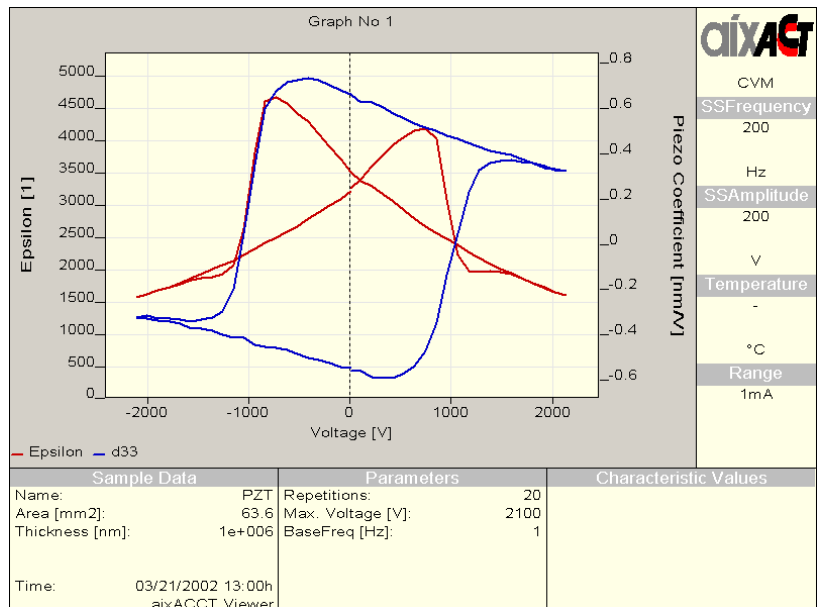
- Large signal polarization and displacement measurement.

Soft PZT bulk sample response to large signal excitation voltage at room temperature.



- Small signal capacitance and piezocoefficient measurement

Soft PZT bulk sample response to large signal excitation voltage at room temperature.



- Temperature dependent measurement

Soft PZT bulk sample response to large signal excitation voltage and temperatures between 50°C to 200°C.

