

# PCTS Series

## Power Capacitor Test System



The **PCTS Series Power Capacitor Test System** are self-contained test sets incorporating all features necessary for testing power capacitors.

Logistics pipeline and pneumatic electrodes are used in the **PCTS Power Capacitor Test System**, it make the test very easily and save lots of time, improve efficiency, in all the test process, no need any artificial operation in the test area .Automatic discharge and perfect low voltage protection permit a more safety test environment than any other traditional test lab.

Power capacitors are highly quality requirement products in the power transmission system, so it need the testing products with compromising quality and high technology. **The PCTS system** can totally arrive all the requirement form customer, it have the most modern design with best quality components inside. For all routine test, within one system, the PCTS system supply customer a turn key test solution.

**The PCTS Power Capacitor Test System** has been designed with these requirements in mind, as a multifunctional tool for testing power capacitors. All supported tests are performed in conformity with **GB/T 11024.1-2010** and **IEC 60871-1-2005**.

### Applications:

- ◆ 12kV/2500kVar and Below Dry and Oil Filled Power Capacitor

(Samgor also can special design for customer.)

### Testing Applications:

- ◆ Capacitance and Tan Delta Test
- ◆ AC/DC Apply Voltage Test (Tank to Electrode)
- ◆ AC Apply Voltage Test (Electrode to Electrode)
- ◆ Partial Discharge Test
- ◆ Insulation Test
- ◆ Internal Fuse Discharge Test
- ◆ Discharge Resistance Test

### Benefit and Advantage:

- ◆ Fully Automatic to Finish Test
- ◆ Significantly Reduce Testing Time
- ◆ Increase Production
- ◆ High Repeatability
- ◆ Decrease Personal Equation
- ◆ Direct Build-Up of Database
- ◆ Pass-Fail Criteria from Database and Automatic Divide the PASS/FAIL Test Object
- ◆ Short Throughput Time
- ◆ Less Manpower
- ◆ All Measured Results are Directly Compared
- ◆ Integrates All Routine Tests Within One Unique System
- ◆ Fulfills All International Standards (IEC, IEEE/ANSI, GB and GOST)
- ◆ Easy Integration Into Existing Production Lines
- ◆ Integrate Logistics Pipeline and Pneumatic Electrodes Into the Test System
- ◆ Perfect Safety Design than any Traditional Test

#### System

- ◆ Automatic Spray and Read Bar Code
- ◆ Special Electrode Design and Contact Silver Plating permit the Measuring Accuracy

#### Typical System Configuration and Feature:

#### Logistics Pipeline:

The Logistics Pipeline is made by two floor, one is up floor and down floor, the up floor is used for the logistics of the power capacitors what be tested, the down floor is mainly used for recycling the pallet.

- ◆ Accurate mobile by Step Motor Drive and Induction Stroke Switch
- ◆ Heavy Duty Design

#### Pneumatic Electrodes:

The Pneumatic Electrodes are be installed in the top of the logistics pipeline. The system includes the 5 units of pneumatic electrodes. Each electrodes move up and down by air cylinder to connect with the power capacitors.

- ◆ Low Contact Resistance by Contact Silver Plating
- ◆ Vertical and Horizontal side install cushioning device
- ◆ Triangular Support Structure Permit the Stability for Pneumatic Electrodes



#### AC/DC HV Test Set:

AC/DC HV Test Set can generate 100kV(AC)/1A, 120kV(DC)/0.3A. It is used to do apply voltage test (Tank to Electrode). AC/DC is automatic changed by a external switchover device, each time finish the test, the discharge device will automatic discharge through a high voltage discharge switchgear for safety.

- ◆ 100kV/1A (AC), 120kV/0.3A (DC) Output
- ◆ <3% Ripple Factor
- ◆ Automatic Change AC/DC
- ◆ Automatic Change Positive and Negative Polarity
- ◆ Automatic Discharge Device
- ◆ Oil Filled Test Transformer and Heavy Duty Design



#### Parallel AC Resonant Test System:

The Parallel AC Resonant Test System can generate the Voltage up to 54kV, the load capacity is 2500kVar, it is used to do the apply voltage test (Electrode to Electrode), partial discharge test, capacitance and Tan delta test.

The system use the parallel resonant principle to reduce a huge power from the input side. According to the quality factor, it can just use 1/40 to 1/50 of the power to finish the testing.

The system also design 8 difference taps 3kV/5kV/7.3kV/ 10kV/ 15kV/ 21kV/ 29kV/40kV/ 54kV to arrive the test requirement to the difference voltage and capacity test

object.

- ◆ Heavy Duty Design
- ◆ Automatic Motorize Tap Switch
- ◆ Reduce Huge Input Power
- ◆ Waveform Distortion Factor is less than 1%
- ◆ Low Noise Design, the System Noise is less than 70dB
- ◆ Tunable Inductance Range is bigger than 1:20
- ◆ Durable Drive System, life time is more than 10000 hours
- ◆ Tank and Oil Filled Type



### High Precision Capacitance and Tan Delta Test Set

The system include one units 30kV 1000pF  $Sf_6$  filled standard capacitor, one units 1000A-1A high precision current transformer, one units high precision capacitance and Tan delta test set. It used with AC resonant test system to do the high precision capacitance and Tan delta measurement.

- ◆ 1000pF 30kV Standard Capacitor, Tan delta accuracy: <0.001%
- ◆ 1000A:1A CT, Voltage Ratio Error: 10-100ppm, Phase Error: 10-100ppm ( Suggest 4796 or QS30-1)
- ◆ 2840 or TG-3 or QS30A
- ◆ Tan Delta Measurement Accuracy: 0.001%-0.01% ( Depend on difference system configuration)
- ◆ Capacitance Measurement Accuracy: 0.01%

### Capacitor Leakage Current/ Insulation Test Set:

AT610 is a capacitor leakage current and Insulation test set for the preliminary measuring for the power capacitor.

The capacitance measuring is in the low voltage condition, in the same time, the system also get other information such as model number, series number and etc. The measuring result will be also send to host computer and compare with detail measuring for capacitance and Tan delta.

- ◆ Voltage Output: 1V-650V
- ◆ Current Measuring Range: 1nA-20mA
- ◆ Capacitance Test Range: 0.01pF-9999uF
- ◆ Max Insulation Resistance: 325G
- ◆ Handler and Rs232C Connector
- ◆ Accuracy: 0.1%



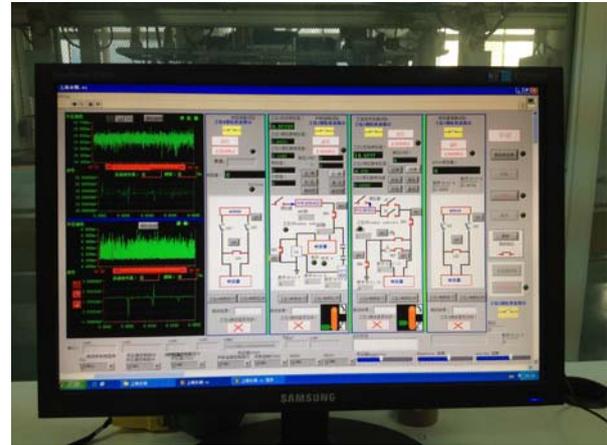
### Ultrasonic Partial Discharge Detector

AE-PD-2S is ultrasonic partial discharge detector is be used to detect the partial discharge by ultrasonic. It is the most popular way to measuring PD for power capacitors.

- ◆ Minimum PD Detect Range: <10pC
- ◆ Frequency Range: 20kHz-200kHz
- ◆ Gain:  $\pm 3$ db
- ◆ Diagnostic Software Include



test equipment control and measuring. After edit one test file, all the testing will be automatic running by itself.



## Digital Control and Measuring System Introduction and Feature:

Samgor supply the control and measuring system has modern design with complete function according to IEC, IEEE/ANSI, GB and GOST. for power capacitor test.

The first feeling for the control room, the one of most important is the outlook of the control units, so Samgor supply the best metal type control desk with perfect surface treatment. After many years using, it also look like fresh and new. Control desk from Samgor also has the compact design, two separate computer be installed in one control desk.



The Software have integrated all 5 test station control, all

The Software is be designed perfect recording function and test report generate function, also it can automatic update the test detail to the internet host computer by ACSII automatically. All the test process can be managed by the test file, after managed the test file, each test can finished just by one bottom.

### Safety Feature:

- ◆ Each Test Station Equip the Automatic Discharge Switch
- ◆ On/Off Push-button Control
- ◆ Emergency Off Mushroom Switch
- ◆ High Voltage "On" Flashing Warning Light
- ◆ "Foot Switch" Safety Interlock
- ◆ External Interlock Provision for Test Cage or Other Safety Interlock
- ◆ "Zero Start" Interlock
- ◆ Slow and Fast-Acting Resettable Overload Protection
- ◆ Over Current/ Over Voltage Alarm (Over Current Relay)
- ◆ Door Switch

### Test Process

#### No.1 Station: Capacitance Preliminary Measurement

Get arrive No.2 station signal then collect the related information such as model number, series number,

measuring the capacitance; Also send the information to the host computer for preparing the next test. Pass then the logistics pipeline move from No.1 to No.2 station. Failed then mark, stop testing, move to fail area.

#### **No.2 Station: Apply Voltage Test (Tank to Electrode)/ Internal Fuse Discharge Test**

Get arrive No.2 station signal then send the signal to host computer, then do the HV test. Pass then the logistics pipeline move from No.1 to No.2 station. Failed then mark, stop testing, move to fail area.

#### **No.3 Station: Apply Voltage Test ( Electrode to Electrode)/ Partial Discharge/ Capacitance/ Tan delta Measurement**

Get arrive No.3 station signal then send the signal to host computer, then do the HV test. Pass then the logistics pipeline move from No.3 to No.4 station. Failed then mark, stop testing, move to fail area.

#### **No.4 Station: Insulation Resistance Measurement (Electrode to Electrode)**

Get arrive No.4 station signal then send the signal to host computer, then do the HV test. Pass then the logistics pipeline move from No.4 to No.5 station. Failed then mark, stop testing, move to fail area.

#### **No.5 Station: Pass/Fail Divided**

Get arrive No.5, calculation by host computer, pass or fail capacitor divided to two difference area.

### **Company Profile:**

Over 20 years professional supplier in the high voltage test equipment business make the high voltage test department become most important branch of SAMGOR group, SAMGOR has a reputation for quality and reliability based on extensive products and vast experience. SAMGOR provides test, measurement and diagnostic equipments for a wide range of electrical applications. Test systems for laboratory, factory and field use are available.

**Welcome any customer send us your spec detail of the test object, Samgor professional engineer will one to one make a most suitable test solution for you.**

### **For further information please contact:**

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