

MPTTS Series

Mobile Power Transformer Test System



MPTTS Series Mobile Power Transformer Test System

is design to test and diagnose in both single phase and three phase power transformer up to 500MVA. The system will perform the following tests in accordance with ANSI / IEEE C57.12.90 and IEC 76 latest edition standards

Samgor offer the turn-key project of the MPTTS mobile power transformer test system mainly consists of the station design, type selection and purchase of special equipment, installation and commissioning, training of the testing personnel, etc.

Samgor has developed transformer test systems that offer the customer reliability and flexibility solution. By utilizing Programmable Logic Controllers (PLC) in the control system, the MPTTS series power transformer test system allows the customer the ability to add optional features or change the test sets operating procedures by reprogramming the PLC. This is much more cost effective than rewiring the test set as was required in traditional test systems. Reliability is a top priority for Samgor. Craftsmanship and the use of top quality materials and components insure the customer years of reliable service from their transformer test system.

All test data are recorded automatically and the necessary

correction calculations according to ANSI C57 and IEC 60076 standards are performed automatically. The system calculates corrected losses, efficiency, regulation and percent impedance. Computer aided data acquisition is increasingly becoming the standard as customers demand computer generated reports that reduce operator error. The system features Microsoft Windows based testing software which builds a data base of transformer test results and creates accurate final test reports in Microsoft Office format. Setup maps for each test are provided to reduce costly connection mistakes.

Applications:

- ◆ 500MVA and Below Power Transformer

Test Applications:

MPTTS transformer test systems are designed to perform transformer tests in accordance with ANSI C57 and IEC 60076 standards, latest edition. These tests include:

- ◆ No Load Loss up to 500MVA Power Transformer
- ◆ Load Loss up to 90MVA Power Transformer
- ◆ Induce Voltage Test up to 500MVA Power Transformer
- ◆ Temperature Rise / Heat Run Test up to 500MVA Power Transformer
- ◆ Partial Discharge Measurement

Benefit and Advantage:

- ◆ Significantly Reduce Testing Time;
- ◆ High Repeatability;
- ◆ Direct Build-Up of Database;
- ◆ Pass-Fail Criteria from Database;
- ◆ Short Throughput Time;
- ◆ Less Manpower;
- ◆ All Measured Results are Directly Compared;

- ◆ Barcode Reading Capability;
- ◆ Integrates all routine tests within one unique system
- ◆ Fulfills all international standards (IEC, IEEE/ANSI and GOST);
- ◆ Easy integration into existing production lines;
- ◆ Output Tap Selector Switch (Motorized);
- ◆ Yokogawa WT3000 Wattmeter;
- ◆ Wave Form Distortion is less than 2%;



5000kVA EPS

Safety Feature:

- ◆ Main Power Circuit Breaker with Indicating Light;
- ◆ 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 (ABB Over Current Relay);
- ◆ Monitor the temperature of each system components, over temperature alarm (ABB over temperature relay);
- ◆ Door Switch;
- ◆ Intelligent Circuit Breaker;

Tunable Frequency Power Source Cabinet Feature:

- ◆ IP22 Protection Level Cabinet;
- ◆ Siemens IGBT Module;
- ◆ EPCOS DC Filter Capacitor;
- ◆ Voltage Adjust from 2%-110%;
- ◆ Wave Form Distortion is less than 2%;
- ◆ Heavy Duty Design;
- ◆ Frequency from 40-300Hz Available;
- ◆ Manual/ Automatic Control Panel Available in the system;
- ◆ 0.01Hz Frequency Adjust Step;
- ◆ Partial Discharge is lower than 50pC Three Phase/ Single Phase Output;
- ◆ Working Power Factor from 0.05-1;
- ◆ Suitable to Three Phase and Phase-Phase Working;

TMS System Feature:

- ◆ Yokogawa WT3000 Wattmeter to Permit Accuracy and Stability;
- ◆ Automatic Generate Test Report;
- ◆ 0.01% Accuracy of Ratio Error and Phase Error for CT and PT;
- ◆ 5%-120% Range Permit the Accuracy;
- ◆ 5W Output Power Suitable to Any Other Power Analyzer;
- ◆ 0.25A-1000A /50kV Test Range for CT;
- ◆ 25V-50kV Test Range for PT;
- ◆ Automatic Select the Taps of Test Range;
- ◆ Generate the Test Report;



Intermediate Transformer Feature:

- ◆ Oil Filled, Tank, Bushing Output, 2 units Motorized Tap Switch;
- ◆ Low Impedance to 8%;
- ◆ Low Noise to 75dB;
- ◆ Wave Form Distortion is less than 3%;
- ◆ Oil Temperature Meter with Temperature Limit;
- ◆ Three Phase Input / Output;

- ◆ Heavy Duty, Temperature Rise is lower than 35K;
- ◆ Typical 3125V-100000V, 3125V each step;
- ◆ Frequency from 50-200Hz Available;
- ◆ Partial Discharge is lower than 30pC;
- ◆ Software Control Tap Switch;



HV Compensation Capacitor Bank Feature:

- ◆ 31.5MVar Capacity, 36kV Rated Voltage;
- ◆ ABB Power Capacitors are be used;
- ◆ Internal fuse include;
- ◆ Heavy Duty Design;
- ◆ 0.5MVar-31.5MVar, Each 0.5MVar Adjustable Step, High Accuracy Adjustment, Increase the Input Power Factor;
- ◆ Motorized / Air-Operated Insulation Switch for each Tap Changer.;
- ◆ Motorized / Air-Operated Safety Grounding Switch include for safety;
- ◆ Manual/ Automatic Control Panel Available;
- ◆ Suitable to Three Phase and Single Phase Working;
- ◆ Perfectly Match for Test Object., Decrease the Capacity of Power Requirement;

LV Compensation Capacitor Bank Cabinet Feature:

- ◆ IP22 Protection Level Cabinet;
- ◆ 10-950kVar, each 10kVar step fine adjustment;
- ◆ Automatic switchover the capacitors according to the quality factor at on load condition;
- ◆ Heavy Duty Design;
- ◆ Safety Grounding Switch include for safety;
- ◆ Manual/ Automatic Control Panel Available in the system;
- ◆ LV side compensation capacitor bank always guarantee the lowest input power for whole system;



LV Compensation Reactor Cabinet Feature:

- ◆ IP22 Protection Level;
- ◆ Dry Type reactors are be used;
- ◆ Temperature rise is less than 55k;
- ◆ 50-500kVar, each 50kVar step adjustment;
- ◆ Super Compact Design;
- ◆ Heavy Duty Design;
- ◆ Manual/ Automatic Control Panel Available;
- ◆ Suitable to Three Phase and Single Phase Working;
- ◆ Perfectly Match for Test Object., Decrease the Capacity of Power Requirement;



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 has concise interface and perfect function. It is be designed by Labview in the Window environment. It is consist the control and measuring function by Transformer No Load Loss, Transformer Load Loss, Induce Withstanding Voltage Test, Apply Voltage Test, Temperature Rise Test, partial discharge test and Impulse Voltage Test together.

Partial Discharge Detector Feature:

- ◆ SG4008
- ◆ 0.1pC-10nC Test Range
- ◆ 6 Channels
- ◆ Automatic Synchronism Input Frequency
- ◆ Powerful Anti-influence Function Inside
- ◆ Narrow Bandwidth Measurement Available
- ◆ Measure the Extinction and Inception Voltage Available
- ◆ Fulfill IEC60270 and IEC60073
- ◆ Input:110V-230V 50Hz/60Hz

The Software is being designed perfect recording function and test reports 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.



CCS-1 Manual and Automatic Control and Measuring System

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 transformer test.

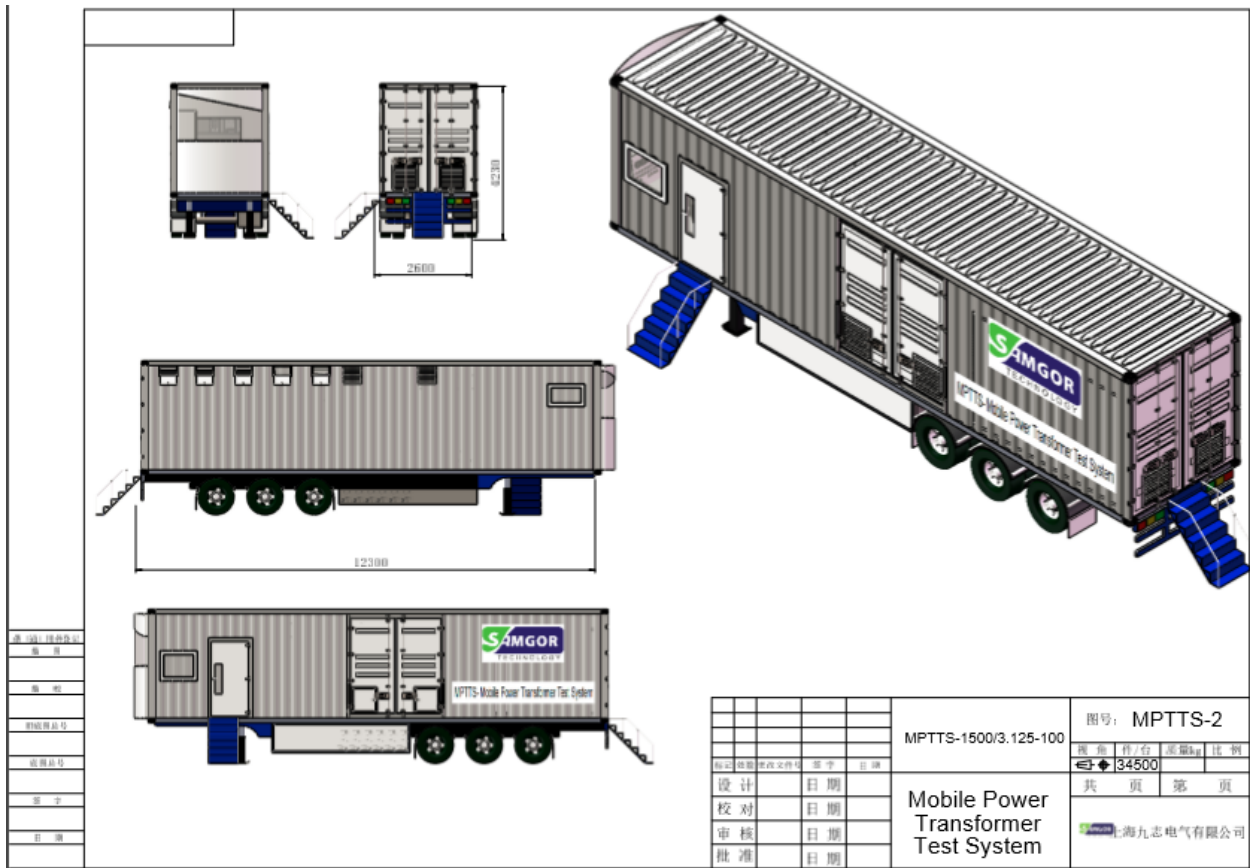
Test Report		Date: 20130318	
YOUR LOGO	Test Report	Order No. : 16888	Serial No. : 997888
Test Information			
Test Item: 500kV-500kVA	Customer: XXXXX	Rated Power: 500kVA	Rated Voltage: 500kV
Rated Power: 500kVA	Rated Voltage: 500kV	Rated Current: 1057.8A	Rated Frequency: 50Hz
Test Date: 2013.03.18	Test Place: XXXXX	Test Time: 10:00	Test No: 1001
Test Result: Pass	Test Status: Normal	Test Method: IEC 60076-1	Test Standard: IEC 60076-1
Test Results			
Voltage Ratio Measurement			
Tap	Rated Voltage (kV)	Measured Voltage (kV)	Percent
100%	500.0	500.0	100.00
75%	375.0	375.0	100.00
50%	250.0	250.0	100.00
25%	125.0	125.0	100.00
0%	0.0	0.0	0.00
Winding Resistance Measurement			
Winding	Frequency (Hz)	Resistance (mΩ)	Phase Angle (deg)
1-2	100	1.234	0.123
1-3	100	1.234	0.123
2-3	100	1.234	0.123
1-2	500	1.234	0.123
1-3	500	1.234	0.123
2-3	500	1.234	0.123
1-2	1000	1.234	0.123
1-3	1000	1.234	0.123
2-3	1000	1.234	0.123
1 of 3			

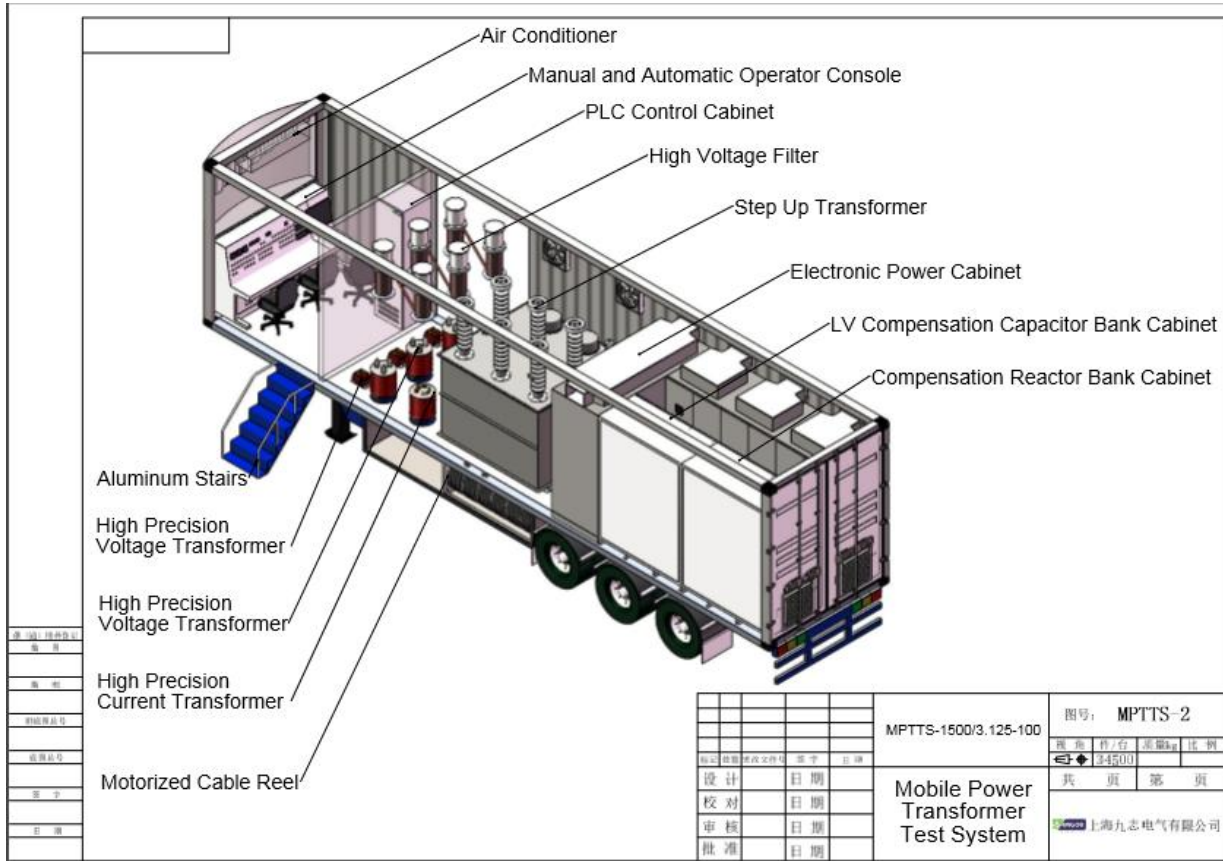
Test Report

System Outlook:



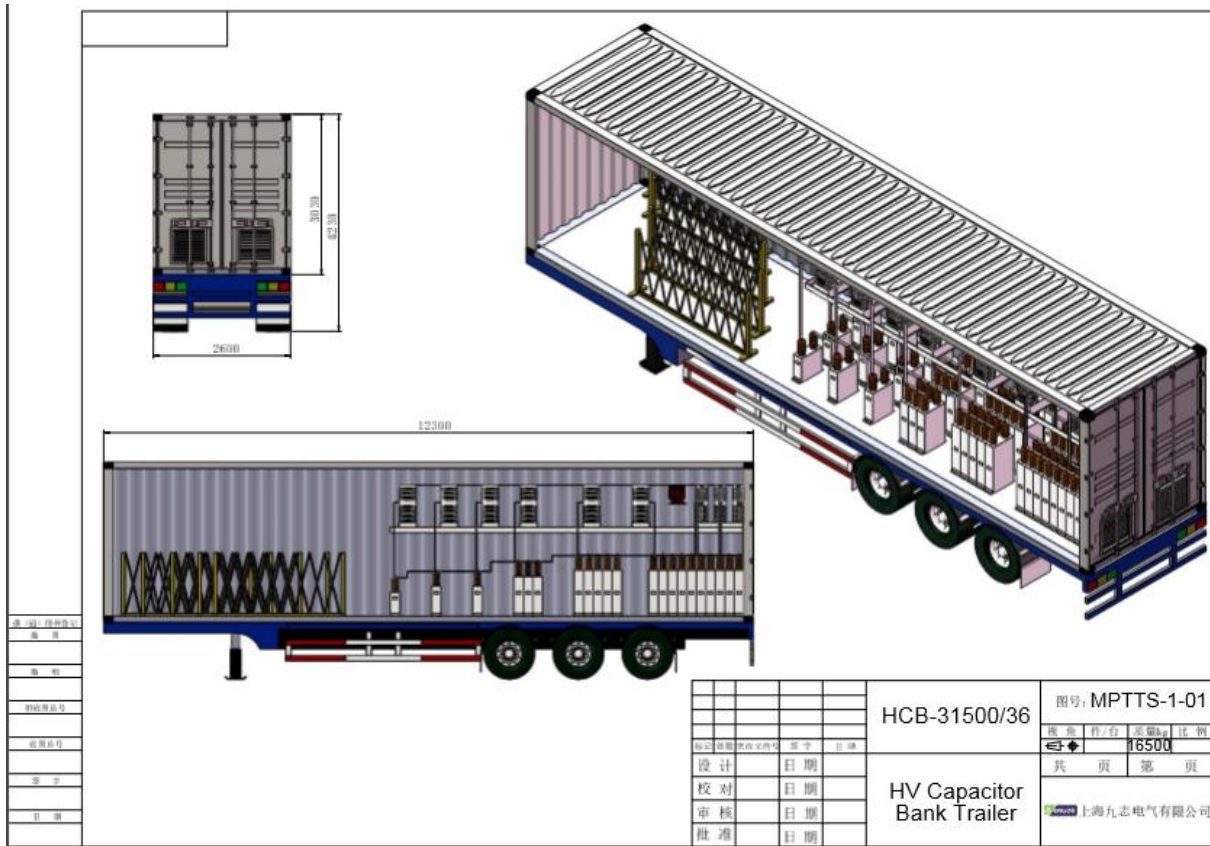
Trailer 1:



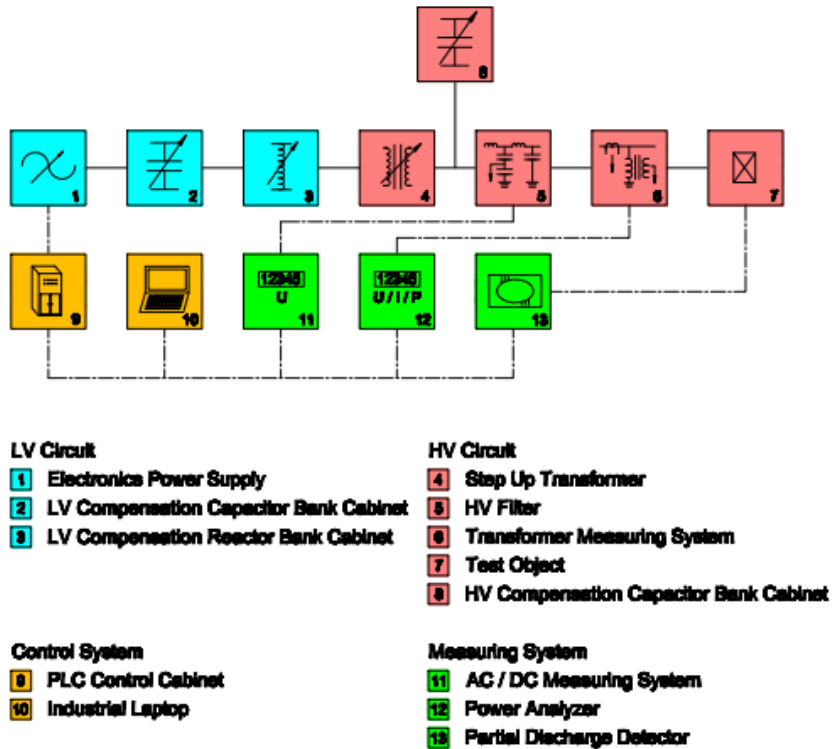


Trailer 2:





Block Diagram (No Load/ Load/ Induce Voltage/ Heat Run Test):



The test system locates in two 40ft trailer with containers. Each container load the components below:

Trailer 1:

1/2/3/4/5/6/7/9/10/11/12/13

Trailer 2:

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For further information please contact:

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