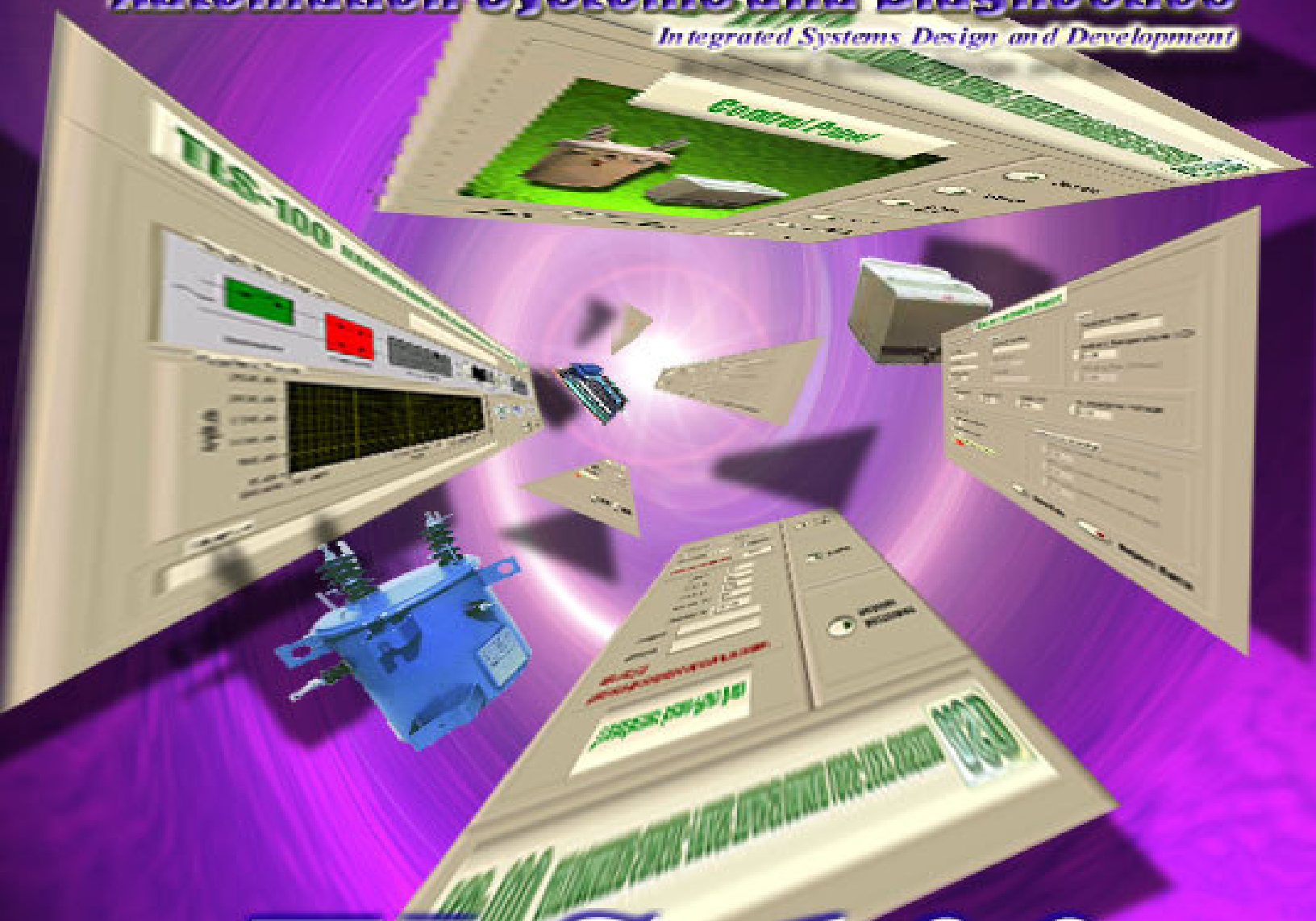
ASD

Automation Systems and Diagnostics

Integrated Systems Design and Development



TLS-100

Single-Phase Transformer Loss-Test System

Single-Phase Transformer Loss-Test System

Automation Systems and Diagnostics' TLS-100 is a single-phase transformer loss measurement system. It provides precise measurements for load, no-load losses, induced and applied tests for new, installed, or repaired pole and pad-mount transformers. The TLS-100 is a mobile, self-contained test system designed to be used in the field or in the shop.

Since transformer losses contribute to as much as 45% of the total losses in power distribution systems, they have been classified as the single major cause of wasted energy in electricity production industry. Thus, utilities conduct loss evaluation tests on existing and new transformers to determine their efficiency and identify high loss transformers for replacement.

ASD offers you one system that can perform loss measurements on a wide range of KVA and KV class rated transformers. The system performs the following measurements in accordance with IEC, IEEE / ANSI C57 and other international standards:

- Excitation current
- Core losses
- Impedance Voltage
- Copper losses

DIGITAL POWER METER

The TLS-100 is unique in design than any other loss system. It has a Yokogawa Wattmeter for the measurment of voltage, current and power. Its fundamental accuracy is 0.2%, and it has a built-in small current range of 5mA for precise measurement of no-load losses.

The most outstanding feature is user calibration. The wattmeter can be easily calibrated in house with the proper calibration source or sent out to calibration laboratories. There is no need to have costly calibration services done by having contracting agencies perform on-site calibration.

This wattmeter is incorporated into the TLS-100 test set to measure accurately the parameters of all tests performed on transformer under test.

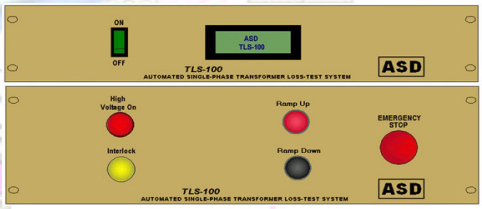
POWER SOURCE

The regulated power supply is basically a variable autotransformer. It delivers any desired voltage with negligible variation in output voltage from no-load to full-load current. The sine wave output is distortionless and is linear for the full range.

The variac is supplied by either a fixed 60Hz or 400 Hz supply. The 400Hz fixed voltage switching power supply is only used for the induced test.

TLS-100 ELECTRONIC CONTROL

The TLS-100's control unit is equipped with a powerful electronics control board. The controller supplies the required fully automated operation modes.



Visual light indicators are activated when high voltage is applied or interlocks are on. Equipped with an LCD screen, you will be informed of your TLS-100 and test stage status at all times. Emergency stop buttons, ramp up / down buttons and power on/off buttons are available.Further more, the system shall automatically stop as the user pulls off his foot from the paddle even if the stop button isn't pressed.

Single-Phase Transformer Loss-Test System

CONTROLLER FEATURES

- Intel 8032 micrcontroller @ 11 Mhz
- 8 kB RAM, 32 kB EPROM
- 24 Digital I/Os
- Serial Interface @ 9600 baud rate
- LCD 2 x 16 Dot Matrix Display

TLS-100 SYSTEM FEATURES

- Compact portable design
- Short setup time
- Precision digital power meter with auto-ranging, providing both average and rms readings
- Measurement accuracy of 0.2%
- Easy calibration process
- Low current range measurement
- Controls and instruments conveniently accessible
- Test stack light indicator

SYSTEM SPECIFICATIONS

- ***Power Supply (15KVA)***

Input Voltage	Output voltage
240/480 V	0-600V
1Φ, 50/60 Hz	1Φ, 50/60 Hz

- ***Switching Power Supply (2KVA)***

Input Voltage	240VAC, ±20%
Load Regulation	Max ±6% @ full load
Harmonics	Less than 5% @ Full load
Output Protection	Current limiting, thermal shutdown

- ***Power meter range***

Voltage	0 to 600 V, autoranging
Current	0 to 20 A, autoranging

- ***Overall System accuracy***

Voltage	±(0.2%reading + 0.2%mg*)
Current	±(0.2%reading + 0.2%mg*)
Losses	±(0.2%reading + 0.2%mg*)

**mg = measurement range*

TESTING CAPABILITY

167kVA	4%	15kV	12A
250kVA	4%	15kV	17A
325kVA	4%	15kV	22A

(Optional: higher impedance and voltage class)

SAFETY FEATURES

- Zero start interlock
- Over-current and over-voltage protection
- Separate power and control circuit breaker
- Emergency shutdown button
- Provision for safety interlock (optional)

PHYSICAL SPECIFICATIONS

- ***Environmental***

Operating temperate	40º to 100ºF
Humidity	5 to 95%

- ***Dimensions***
  44” H x 24” W x 29.25” D

- ***Weight***
  Approximately: 300 lbs.

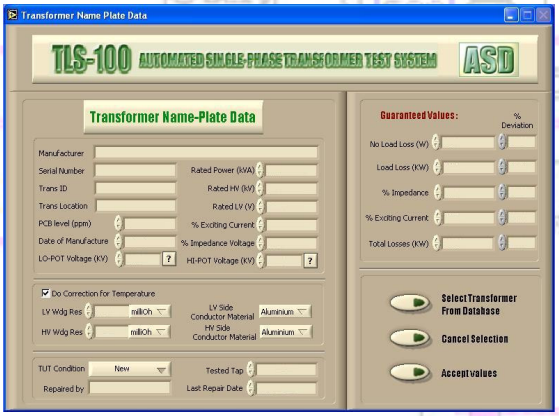
- ***Enclosure***
  The TLS-100 is housed in a rugged sheet metal enclosure equipped with casters for mobility.

TLS -100 SOFTWARE

The previously described hardware is equipped with a powerful software, specifed for its user friendly interfaces and wide functionality. As the software runs, authentication is requested, before this main control panel appears. Users logged in as supervisors are capable of accessing all functions; adding,removing users and configuring the system’s settings as desired.

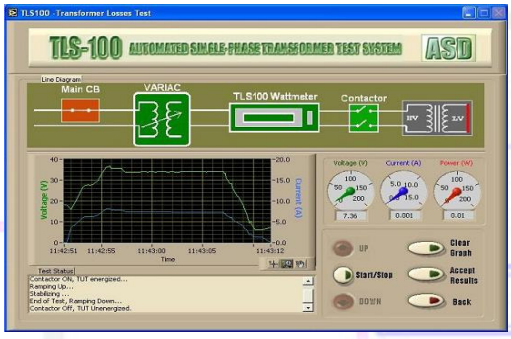
Single-Phase Transformer Loss-Test System

On the other hand, those registered as operators, may perform tests and view results only.The software offers a hardware diagnostics option that checks the proper operation of controller, wattmeter and variac. Four types of losses are provided: Load loss, No load loss, HI-POT HV and HI-POT LV tests. Before attempting any test, a transformer should be selected, either from database or through filling up a name plate data form.



AUTOMATED TEST RUNS

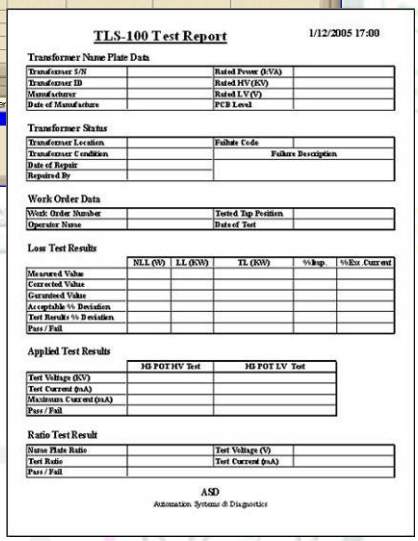
After defining the transformer under test, all you have to do is choose the intended type of test and watch the PC do the work. A graphical monitor and digital indicators will show you the voltage, current, and power levels at all times. The status bar displays messages informing operators of the tests' processing steps. You may manually ramp up or down voltage if you have initially chosen the walkthrough mode.



TEST HISTORY DATABASE AND REPORTING

The TLS-100 software is equipped with its own database. All performed tests may be viewed, stored and archived to this database. Test results are expressed as numeric values and finalized with a pass or fail wording. Operators can recall the test history of any transformer, defining the test's date or the work order number.

Furthermore, for users' convenience, ASD introduces one more option. With a click of a mouse, tests' results of a specified transformer will be send to an excel sheet. At this stage, generated reports may be viewed in neat format and even printed out.



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