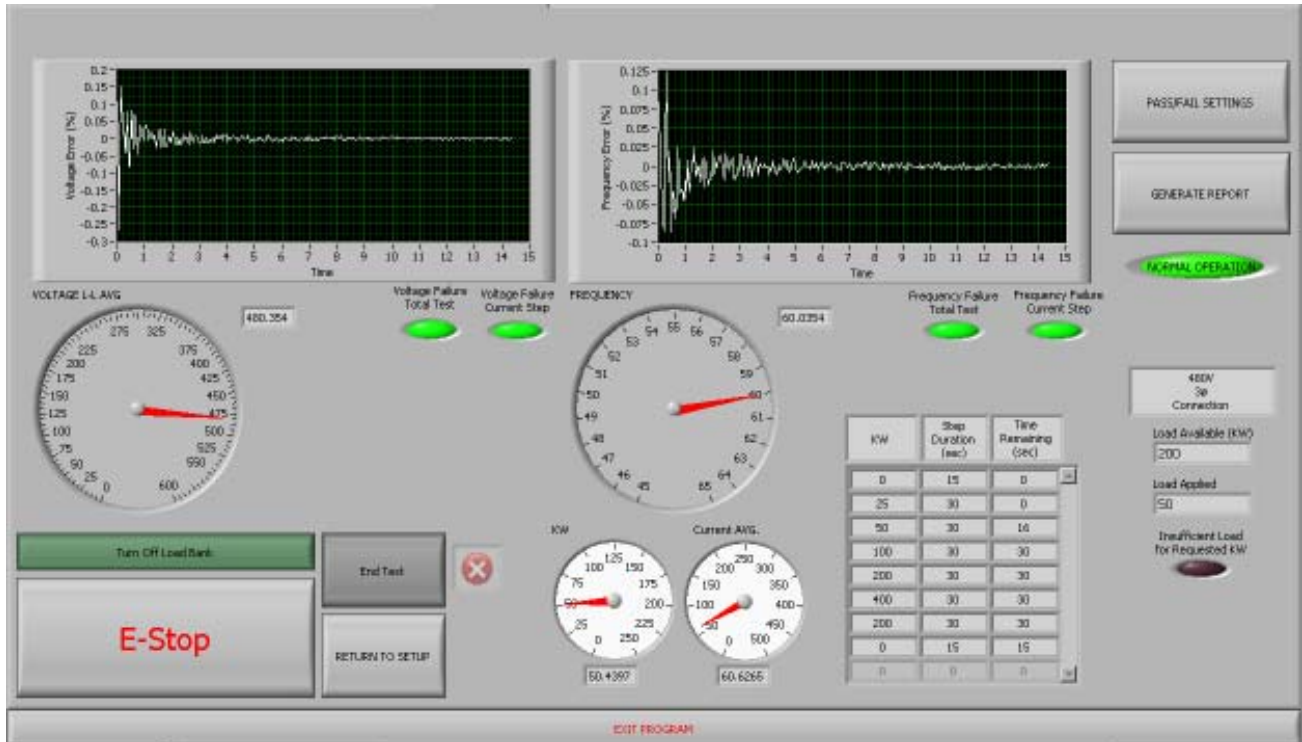


# AutoTest Software

## AUTOMATED GENERATOR LOAD TESTING, PERFORMANCE-PROVING AND DOCUMENTATION



Operating Screen

Simplex AutoTest Software delivers full automation of generator load testing when applied with a load bank system equipped with AutoTest hardware. Simplex AutoTest provides user-definable automated load-test routines, pass-fail analysis, data collection and report generation. Simplex designed and developed the AutoTest Software system specifically for OEM production line test cell use. AutoTest is equally applicable to field testing, performance-proving, commissioning and acceptance of generator sets. AutoTest is intended for use with Simplex resistive and resistive/reactive load banks, either as new equipment or as a field upgrade. AutoTest can also be applied to other brands of load banks when these load banks are equipped with AutoTest hardware.

AutoTest runs under Windows XP on a PC meeting system requirements noted below. AutoTest communicates with the load bank over a dedicated Ethernet system.

AutoTest can be user configured for automated test per specific generator rating, model, serial number or bar-code scan. Test routines can be user defined as KW versus time, KW @ power factor versus time, percent load versus time, etc. Each routine can be saved to memory. Pass-fail performance criteria can be pre-set and saved as either global set points or as specific generator settings. Typical pass-fail criteria are voltage error and frequency error under transient and steady-state loads. Full manual load control is also possible with loads entered as direct entries, as percents, as analog mimic panel switches, or other user configurable interface.

The AutoTest operating screen presents high accuracy digital and analog capture and display of voltage, amperes, frequency, KW, KVAR, power factor. Running time and accumulated time, KW/KVAR-hours, and harmonic analysis are also available.

Engine data can be collected as well from appropriate network devices. This data can be integrated for pass-fail analysis, displayed on the AutoTest main operating screen and reported in the test documentation.

AutoTest can be networked to central management systems and data collection systems for display of values and collection of data. AutoTest equipped load banks can be networked to parallel individual cells to form a larger virtual test cell.

**SIMPLX<sup>®</sup>**



AUTOTEST SOFTWARE • Automated Generator Load Testing, Performance-Proving & Documentation

Typical Generator Set-up Screen

The screenshot shows a software interface for setting up generator test parameters. It is organized into several sections, each with a 'Load' and 'Save' button:

- Customer:** Name: Simplex, Reference: 12045, Order #: AL23, Sales Order #: 0450, Quoted Serial #: 0769, Engineer: Advertising, Test Center: 1.
- Generator:** Model: Simplex, Code: A, Rating: 700 kVA, 60 Hz, 1000 kVA, 60 Hz, 400 V, 3.
- Engine:** Make: Simplex, Serial #: 0123, Governor: 0166, Type #: P100, Speed: 1800RPM, Battery GND: +.
- Alternator:** Make: Simplex, Serial #: 0123, Phase Order: 1-2-3-4, Type #: P456, AVR: 0789, Output Gnd: 123.
- Radiator:** Make: Simplex, Serial #: 0123, Type #: 0456.
- Panel:** Make: Simplex, Drawing #: P123, DC Index: 045.

At the bottom, there are 'AUTOMATIC' and 'MANUAL' buttons, a 'LOG OFF' button, and a red 'EXIT PROGRAM' label.

Test Routine Screen for KW Versus Time Programming

The screenshot shows a test routine programming screen. It features a table for defining test points:

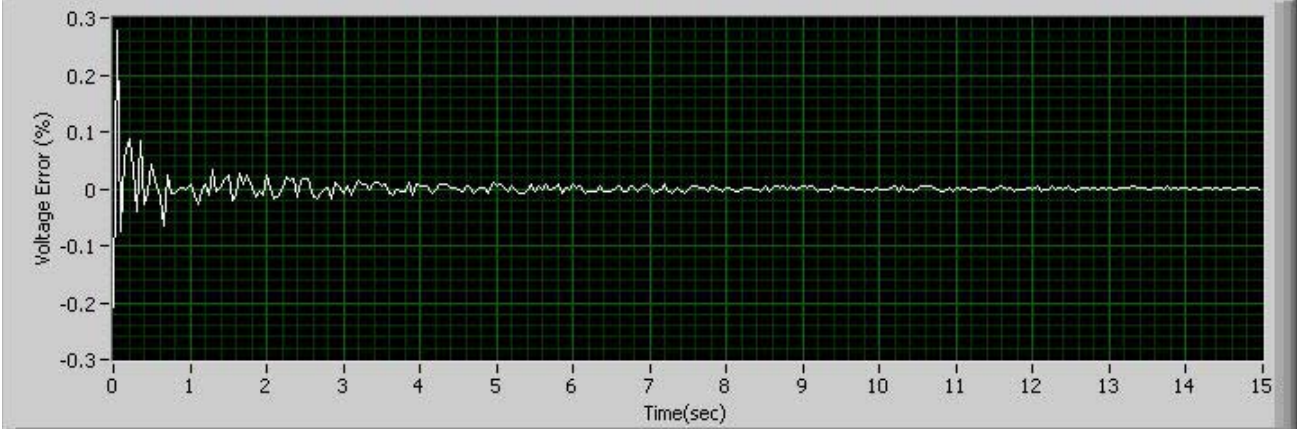
KW	TIME (SECONDS)
5	30
10	30
150	30
200	30
400	30
1200	30
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0

Below the table are three buttons: 'Load KW Suite Test Sequence', 'Save KW Suite Test Sequence', and 'Clear KW Suite Test Sequence'. A large 'RUN' button is centered at the bottom. A red 'EXIT PROGRAM' label is at the very bottom.

### SYSTEM REQUIREMENTS

Windows XP equipped PC, 1.4GHz, 1GB RAM  
Dedicated Ethernet

**Typical Test Documentation**



**Customer** Name: Simplex  
 Reference: 12345  
 Order #: A123  
 Sales Order #: B456  
 Genset Serial #: C789  
 Engineer: Adam Narup  
 Test Center: Test Cell 1

**Generator** Model: Simplex  
 Rating:  
 500kVA  
 1 cosφ(pf)  
 500 kW  
 480 V  
 60 Hz  
 3 Ph  
 3 Wire

**Engine** Make: Simplex  
 Serial #: D123  
 Governor: E456  
 Type #: F789  
 Speed: 1800RPM  
 Battery GND: +

**Alternator** Make: Simplex  
 Serial #: G123  
 Phase Order: L1-L2-L3  
 Type #: H456  
 AVR: I789  
 Droop Kit: J123

**Radiator** Make: Simplex  
 Serial #: K123  
 Type #: L456

**Panel** Make: Simplex  
 Drawing Number: M123  
 DC Volts: 24V

**Test Settings**  
 Transient Voltage Maximum + Deviation: 0.45%  
 Transient Voltage Maximum - Deviation: -70.00%  
 Maximum Transient Voltage Recovery Time: 2.00sec  
 Transient Frequency Maximum + Deviation: 0.45%  
 Transient Frequency Maximum - Deviation: 0.45%  
 Maximum Transient Frequency Recovery Time: 2.00sec  
 Steady State Voltage Maximum + Deviation: 0.10%  
 Steady State Voltage Maximum - Deviation: 70.00%  
 Steady State Frequency Maximum + Deviation: 0.50%  
 Steady State Frequency Maximum - Deviation: 0.50%  
 Comments  
 Test run 11/11/08 9:27AM. Test will be run by AMN and to be reviewed by Engineering.

-----  
 Step 1:0.0kW to 0.0kW  
 For 15sec  
 -----

**Transient Response**  
 Maximum + Voltage Deviation : 0.31% Pass  
 Maximum - Voltage Deviation : -0.29% Pass  
 Maximum + Frequency Deviation : 0.08% Pass  
 Maximum - Frequency Deviation : -0.10% Pass  
 Voltage Recovery Time : 0.05sec Pass  
 Frequency Recovery Time : 0.00sec Pass

**Steady State Response**  
 Steady State Voltage Value : 479.72  
 Steady State Frequency Value : 59.98  
 Maximum + Voltage Deviation : 0.02% Pass  
 Maximum - Voltage Deviation : -0.01% Pass  
 Maximum + Frequency Deviation : 0.02% Pass  
 Maximum - Frequency Deviation : -0.02% Pass

