



Exploring the Benefits of New Hipot Testing Technology

Introduction

Like many industries reliant upon technology, the electrical test and measurement field has progressed in leaps and bounds since its early days. Safety testing equipment is no different; Hipot testers have progressed far beyond the “transformer-in-a-box” design of the 1950’s. These older models with their analog meters, capacitive compensation devices, and continuous output have given way to smaller, smarter, and safer testers.

While many customers have already upgraded their Hipot testers, some still hesitate due to a lack of familiarity with this new technology. With a little use, however, test operators and quality assurance supervisors alike will begin to discover the benefits that these easy- to-use features provide.

Side by Side Comparison

Below is a table listing some of the features that newer SCI [Hipot testers](#) offer. Read on for an explanation of how these features can help you test more safely and accurately.

Technology	Analog Hipot	Digital Hipot
Line/Load Regulation	No	Yes
Output Shorting	No	Yes
Programmable Memory	No	Yes
Remote Control Ability	No	Yes
User Security	No	Yes
Multiple Output Frequencies	No	Yes
No-Load Setup	No	Yes
Accurate Digital Metering	No	Yes

Feature Explanation

Line/Load Regulation

Analog: Older Hipot testers consisted of a variable transformer and a high voltage transformer used to adjust the output to the specified test voltage. Although effective, this method isn’t ideal. Voltage variations on the input side of the transformer can cause the output to fluctuate. Meanwhile, the output

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voltage can also sag or spike depending on the load applied across the tester.

Digital: New SCI Hipot testers maintain the output voltage to within 1% from no load to full load over the complete line voltage range. Thus test operators can be sure that they will get consistent results.

Output Shorting

Analog: Older Hipot testers didn't employ any output shorting device. Thus when the tester was turned off, the voltage applied across the device under test (DUT) would take a long time to discharge creating a shock hazard for any test operator or passerby within arm's reach of the test area.

Digital: New SCI Hipot testers include a high speed output shorting device which discharges a DUT in less than 400 ms. This safety feature allows test operators to test multiple products more quickly without risk of injury.

Programmable Memory

Analog: Older Hipot testers used simple analog meters to indicate test voltage with few instruments equipped with leakage current meters; adjustable potentiometers were used to adjust leakage current trip points.

Digital: New SCI Hipot testers use an internal microprocessor and digital technology much like a computer. Test operators can adjust a variety of settings all with the push of a button. Further, the tester can then store this information, allowing test operators to create several different test procedures and recall them depending on the DUT being tested.

Remote Control Ability

Analog: Older Hipot testers were limited because the operator needed to be close to the tester to be able to adjust the test voltage and manually start and stop the test. This put the test operators in harm's way in order to perform a test.

Digital: New SCI Hipot testers include remote control capability through programmable logic control (PLC). This allows test operators to activate the instrument and perform the test from a remote location or to automate the testing process, limiting exposure to dangerous voltage and current levels.

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User Security

Analog: Older testers used rotary knobs and toggle switches to adjust and set parameter levels. These settings could easily be changed or switched in between or during a test causing erroneous results and danger to the DUT.

Digital: New SCI Hipot testers include a security feature that allows a system administrator to lock-out the front panel. This prevents any non-authorized user from altering test parameters.

Multiple Output Frequencies

Analog: Older testers simply consisted of a high voltage transformer that stepped the output voltage up or down. The output frequency was identical to the input frequency and could not be changed.

Digital: New SCI Hipot testers have selectable output frequency settings. 50 Hz and 60 Hz signals may be chosen depending upon if products need to be shipped to Europe or within the United States.

No-Load Setup

Analog: Older testers required operators to adjust the voltage and current settings while the output was on or hot. This created a dangerous condition for test operators since they could only alter test settings when high voltage was present at the test leads.

Digital: New SCI Hipot testers allow operators to adjust all test parameters with no high voltage present at the output terminals. This creates a safe environment for operators and bystanders.

Accurate Digital Metering

Analog: Older testers used slow analog meters to display voltage and current levels (some older testers didn't even include leakage current meters!). Analog meters often required extended time to settle on a specific value and led to inaccurate test results. Further, depending on whether the meter was placed in the primary or secondary side of the output transformer, erroneous values could be displayed if the output was loaded down.

Digital: New SCI Hipot testers use accurate digital metering systems that provide the test operator with a clear numerical value in real time. Current and voltage

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displays are constantly updated throughout the duration of the test so that the test operator can record accurate test results.

More Information

For more [information](#) on how the latest SCI technology can work for your application, please call us at 800-504-0055.