

IEEE Standards Interpretation for IEEE Std C37.66™–2005 IEEE Standard Requirements for Capacitor Switches for AC Systems (1 kV to 38 kV)

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December 2011

Interpretation Request #1

IEEE Std C37.66-2005, 6.9 “Mechanical life tests” states:

Capacitor switches shall be capable of 10,000 operations when tested at no load without any required maintenance or adjustments, and shall be capable of successfully passing dielectric and contact resistance tests at the end of the mechanical life test. IEEE Std C37.66-2005, 3 should be referred to for definition of operation.

IEEE Std C37.66-2005, 6.2 “Insulation (dielectric) tests” includes the following:

- 6.2.1 – Electrical connections
- 6.2.2 – Points of application of test voltage
- 6.2.5 – Withstand test voltages
 - 6.2.5.1 – Lightning Impulse withstand test voltage
 - 6.2.5.2 – Power-frequency withstand test voltage

Clarification is requested on what is meant by “...and shall be capable of successfully passing dielectric and contact resistance tests at the end of the mechanical life test.”

A test laboratory interprets this to mean that a specimen is to successfully withstand the lightning impulse and power frequency withstand voltages specified in IEEE Std C37.66-2005, 6.2.5, along with contact resistance measurements after completing the mechanical life test. A customer has stated the standard does not intend that the device must still be capable of meeting all its dielectric design tests after a mechanical life test.

An interpretation is requested regarding which statement is correct. Clarification is needed on post mechanical life test evaluation if the tests defined in IEEE Std C37.66-2005,

6.2.5 are not required.

Interpretation Response

The following is the approved response from the IEEE C37.66 Working Group:

1. IEEE Std C37.66-2005 covers dielectric test requirements under both 6.2 “Insulation (dielectric) tests; and 6.6 “Condition of capacitor switch after short-time current tests, rated fault-making current tests, and switching duty tests (see 6.3, 6.4 and 6.5)”. Clause 6.1 clearly notes that once a design test has been made, it does not need to be repeated. Based on this wording, the complete design test requirements associated with 6.2 would not apply as the test requirements to confirm condition of the capacitor switch after completing the design Mechanical life test. IEEE Std C37.66-2005, 6.6, b, does provide a clear electrical insulation validation test that is conducted after other design tests. Based on this review, 6.6, b, would appropriately represent the dielectric test requirement identified in 6.9.
2. IEEE Std C37.66-2005 provides a clear contact resistance test requirement in 6.6, paragraph 3.

In summary, the “dielectric tests” shall follow the requirements identified in IEEE Std C37.66-2005, 6.6, b, and the “contact resistance tests” shall follow the details outlined in 6.6, paragraph 3, associated with contact resistance checks. This interpretation shall be used until the standard is formally revised.