INSTALLER and INSPECTOR QUICK-REFERENCE:
2025 NRCA-MCH-15-A
Thermal Energy Storage (TES) Systems

Purpose and Scope of the Test

This test verifies proper operation of thermal energy storage (TES) systems. TES systems reduce energy consumption during peak demand periods by shifting energy consumption to nighttime. Operation of the thermal energy storage compressor during the night produces cooling energy, which is stored in the form of cooled fluid or ice in tanks. During peak cooling hours the thermal storage is used for cooling to prevent the need for chiller operation.

The test will ensure that the TES system is able to charge the storage tank during off-peak hours and conversely discharge the storage tank during on peak hours. Since the chiller may operate more efficiently at night when ambient temperatures are lower, the system may save cooling energy in some climate zones.

Test trigger

Newly Constructed and Additions/Alterations: Applies to thermal energy storage systems used in conjunction with chilled water air conditioning systems.

Exception: Systems serving healthcare facilities.

Relevant Energy Code References and Required Compliance Documents

Title 24, Part 6 of the California Building Standards Code, Building Energy Efficiency Standards (Energy Code) sections 120.5(a)14, 160.3(d)1N; and NA7.5.14.

Who Can Perform the Test

This test must be performed by an acceptance test technician certified by a CEC-approved Acceptance Test Technician Certification Provider, using compliance document NRCA-MCH-15-A.

Required Tools

This test requires the use of a refractometer or some instrument to verify the concentration of glycol in the chiller matches the design documents.

Estimated Time to Complete Test

- Construction inspection: 0.5 hour.
- Functional testing: 2 hour.

Potential Issues and Cautions

- Potential damage to the chiller, pumps, storage tanks, etc., by improper manipulation of the control system.
- Perform this test with the assistance of the control system vendor or facility operator.

Inspection Enforcement

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Required:
Verify the inspector is in receipt of one NRCA-MCH-15-A for EACH system that must demonstrate compliance. All NRCA forms for Mechanical Systems must have a water mark logo from a certified Mechanical ATTCP Provider.

Optional Equipment Check:
- None. No specialized tools are required for this test.

Acceptance Criteria

The TES system and the chilled water plant is controlled and monitored by an EMCS. Verify:
- The TES system stores energy in storage/charge mode.
- The storage charging stops when an end of charge signal is generated.
- The TES system starts discharging with the compressor(s) in discharge mode.
- The TES does not discharge, and the cooling load is met by the compressor(s) in mechanical cooling only mode.
- The TES discharges with the chiller sharing the load during discharge and mechanical cooling mode.
- Storage does not discharge, and all compressors are off during the off/storage-secure mode.
- When applicable, tanks can be charged while serving in active cooling mode during charge-plus cooling mode.

Follow the **Construction Inspection** and **Functional Testing** instructions on the NRCA-MCH-15-A.