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The National Renewable Energy Centre of Spain -CENER- is a technology centre specialized in applied research and development as well as in the promotion of renewable energies. CENER is divided into six departments: Wind Energy, Photovoltaic Solar Energy, Solar Thermal Energy, Biomass Energy, Bioclimatic Architecture and Renewable Energy Grid Integration.

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TESTING SERVICES – COLLECTOR TESTING TO THE ISO 9806 / SRCC OG 100 STANDARD

TEST METHODS AND MINIMUM STANDARDS FOR CERTIFICATION SOLAR-THERMAL COLLECTORS

Random selection

Solar collectors being submitted for certification testing must be randomly selected by an SRCC designated representative. The manufacturer shall make available, from existing stock at the manufacturing facility or from his distributor's selection, five production unit collectors of the model to be tested, from which one will be tagged by the SRCC representative for testing.

Receiving inspection

Upon receiving a collector for testing, the test laboratory shall inspect and document the condition of the collector.

Internal pressure

The collector must withstand 1.5 times the maximal operating pressure. If the pressure drops by more than 17kPa or 10% of the test pressure, whichever is less, the collector shall be deemed to have failed the test.

Outdoor exposure

The purpose of this test is to verify integrity of construction after at least 30 days of exposure to adverse conditions. At least 30 days of cumulative exposure to minimum daily incident solar radiation of 17 MJ/m^2.

External thermal shock test

This test is performed as specified in ISO 9806-2, Section 8, Class B: After at least 1 h irradiation at $950W/m^2$, sudden rainfall is simulated by spraying with cold water.

Internal thermal shock test

This test is performed as specified in ISO 9806-2, Section 9, Class B: Sudden inflow of cold water after at least 1 h irradiation with $950W/m^2$.

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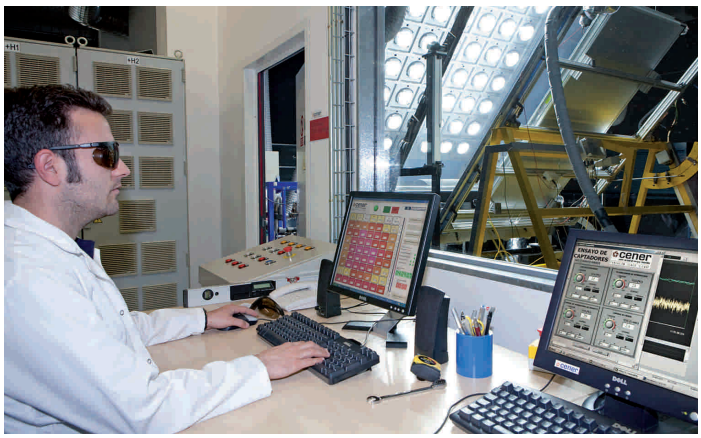
Pressure drop test
The pressure drop across the collector using a heat transfer fluid is measured at sufficiently small flow-rate intervals to accurately describe the flow rate characteristics from minimum through maximum design flow rates. This testing shall be done according to ISO 9806-1.

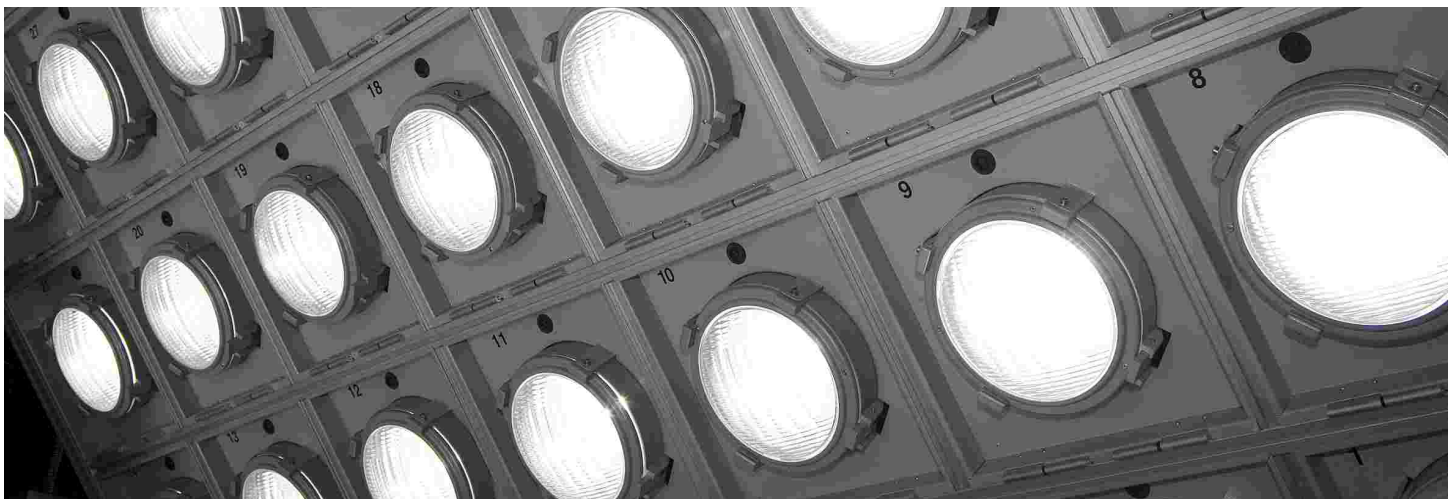
Time constant
A time constant test determines the time required for the outlet fluid temperature to reach 63.2% of its steady state following a step change in input. The test method shall conform to ISO 9806-1, Section 10.

Thermal performance test
The thermal performance test determines "instantaneous" efficiency of the solar collector over a wide range of operating temperatures. The test method used for glazed collectors shall conform to ISO 9806-1.

Incident angle modifier
The IAM is used to modify the efficiency curve determined within 30 degrees of normal incidence to account for changes in performance as a function of the Sun's incident angle. This test shall conform to ISO 9806-1.

Final inspection
After exposure and performance testing, the collector shall be disassembled and causes or conditions that may shorten collector life identified.





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