

## **SOLAR COOKERS INTERNATIONAL TEST STATIONS FOR A PERFORMANCE EVALUATION PROCESS MOTIVATE A NETWORK OF TESTING CENTERS**

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**Abstract:** Solar Cookers International (SCI) has designed and built portable test stations for a performance evaluation process (PEP) for solar thermal cookers. These PEP test stations, along with reproductions built by other groups using SCI's open-source, test station design plans, make for a single, uniform platform used for evaluating the thermal performance of solar cookers in a network of testing centers convened by SCI. Having a common test platform across the solar cooker industry creates a level playing field by which cooker performance can be compared. This initiative by SCI is a response to the solar cooking sector's expressed need for an independent, neutral agency to develop the capacity for testing solar thermal cooking devices. The PEP test station is based on commercially-available, low-cost components, including: thermocouples, an anemometer, a pyranometer and Arduino hardware. The test station control software was designed by SCI to conduct the American Society of Agricultural and Biological Engineers ASAE S580.1 protocol for Testing and Reporting Solar Cooker Performance; it measures temperature changes in an amount of water proportional to the intercept area of a solar cooker, while monitoring wind speed and solar insolation, for normalizing results.

**Keywords:** Solar cookers, Solar cooking, Tier 4 cookstoves, Testing standards, Thermal evaluation