

Performance Analysis of PV Powered Forced Convection Solar Dryer for Small Farmers and Households in NEH Region of India

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Abstract

The PV powered force convection solar dryer was designed and developed at workshop and tested at solar yard of Collage of Agriculture Engineering and Post Harvest Technology, Central Agriculture University, Ranipool, Gangtok, Sikkim for small farmer and households in NEH region of India. The dryer had capacity to dry 6 kg fresh chilli in 32hours. The tests were conducted from 0.800 to 16.00 hrs and the hourly recorded. The no load test was carried out to know the trend of various operating parameters with respect to time. The full load testing of dryer was conducted for evaluating the performance in actual loaded condition. In order to compare the efficiency of drying in PV powered force convection solar dryer, open sun drying was also conducted. The chilli was dried within 32 hrs from initial moisture content 80.2% (wb) to final moisture content about 10% (wb). In order to compare the efficiency of drying in solar dryer PV powered forced convection, open sun drying was also conducted and it was observed that within 56 hrs chilli was dried from moisture content 80.2% (wb) to 11.9% (wb).