VISVESVARAYA TECHNOLOGICAL UNIVERSITY,

BELAGAVI 590018

A project report on

"DESIGN AND FABRICATION OF AUTOMATED HUMIDITY CONTROLED SOLAR PEPPER DRYER"

Submitted in partial fulfillment of the requirements for the degree of

BACHELOR OF ENGINEERING

in

MECHANICAL ENGINEERING

By

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CERTIFICATE

Certified that the project work entitled "**DESIGN AND FABRICATION OF AUTOMATED HUMIDITY CONTROLED SOLAR PEPPER DRYER**" is a bonafide work carried out by

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ABSTRACT

The design and fabrication of an agricultural produce solar dryer for the drying of chili pepper. The solar dryer consists of a solar absorption chamber and a drying chamber. The solar absorption chamber has an opening for the inlet of air, a dark-walled enclosure, and a dark corrugated metal sheet. The drying chamber has tray racks on which two trays are placed, a door for easy access to the trays, their placement, and removal, a transparent glass roof, a circulation fan. An STC3028 humidity and temperature controller is connected to the drying chamber to measure its humidity and temperature. Connected to the controller is a fan that spins to control the humidity when it exceeds the set point (RH of 50%). The system runs on solar power Original Research Article its operation is initiated and halted by an electric switch. Two experiments were carried out with the same mass samples to analyze the performance of the solar dryer as compared to open sun drying. The drying rate, drying time, and efficiency of drying in the solar dryer and the open sun were compared and the results showed a higher drying rate of 11.73g/h on average and a shorter drying time of 27 hours for drying in the solar dryer for each experiment. Drying the chili pepper in the sun took 36 hours for each experiment and it happened at a rate of 8.83g/h and 8.78g/h, respectively. The average efficiency of the dryer is 32.34%.