

# **DEVELOPMENT OF THE SOLAR KILNS USED IN DRYING THE PALM TREES WASTE IN SAUDI ARABIA**

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## **ABSTRACT**

In this work, a simple solar kiln has been investigated for drying the waste of palm trees. This kiln is manufactured from wood available in the local market. It has a vertical front facade and a roof inclined at an angle of 25 degrees on the horizontal which, made of solid transparent plastic with a thickness of 4 mm. The humid hot air at the top of the kiln can be expelled to the atmosphere by a small opening on the back wall of the kiln whereas, this humid air is compensated with new fresh air from an opening at the bottom of the kiln. The instrument of measuring the water content in the palm trees waste has been calibrated by more than one way where, the calibration equation has been created; then the effect of different parameters such as solar radiation intensity, ambient temperature and air humidity has been studied in the case of natural convection air drying process and determined their impacts on the speed of drying by climatic conditions of Taif city.

**KEYWORDS:** Palm Tree Waste, Solar Energy, Solar Timber Kiln, Wood Drying