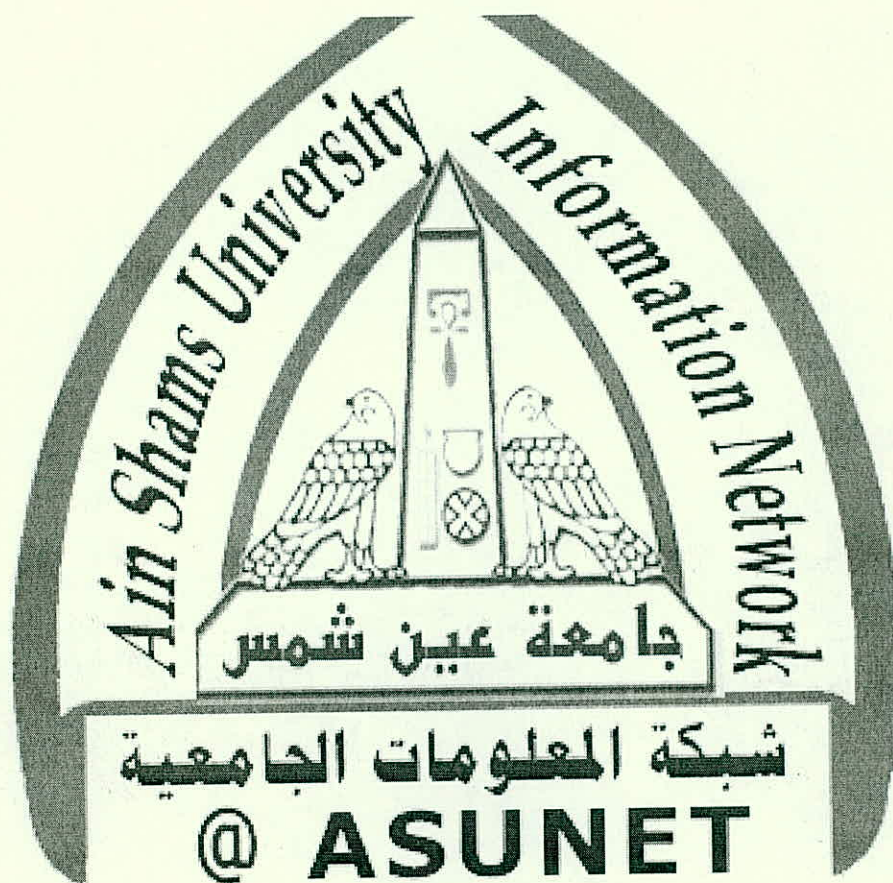




شبكة المعلومات الجامعية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ





شبكة المعلومات الجامعية



شبكة المعلومات الجامعية

التوثيق الالكتروني والميكرو فيلم



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكرو فيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
على هذه الأفلام قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %



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بالرسالة صفحات

لم ترد بالأصل



شبكة المعلومات الجامعية



بعض الوثائق الأصلية تالفة

DEVELOPMENT OF A SOLAR COOKER FOR DRYING USING SOLAR ENERGY

By

Yousri Ahmed Habib Esmail

B.Sc. (Mech. Eng.) Helwan University, 1983

M.Sc. (Ag. Eng.) South Dakota State University, USA, 1994

**A thesis submitted for Doctor of Philosophy
in
Environmental Science**

**Department of Engineering Science
Institute of Environmental Studies & Research
Ain Shams University**

2002

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APPROVAL SHEET

DEVELOPMENT OF A SOLAR COOKER FOR DRYING USING SOLAR ENERGY

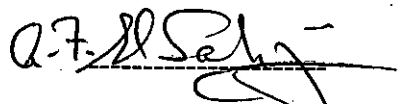
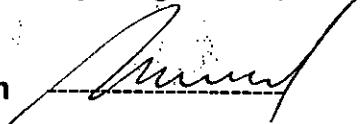
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ABSTRACT

Yousri Ahmed Habib Esmail, studies on "Development of a Solar Cooker for Drying Using Solar Energy", Unpublished Ph. D., Ain Shams University, Institute of Environmental and Research.(2002).

The main objectives of this study are constructing and testing a new design of the solar cooker. The cooker was designed as semi-circle shape and fabricated from wood and the absorber plate made of aluminum sheet. The effect of some factors such as number of glass covers, plane reflector and tilt angle on the cooker performance were studied. Doubling the glass cover increased the temperatures inside the cooker and extended the water-boiling period to 2 hours. The absorber plate temperature increased from 107°C to 127°C when plane reflector was used. In order to accelerate the cooking process, contour maps indicate the temperature distribution inside the cooker were introduced in the present work. Analyzing these maps can help determining the appropriate placement for cooking pots and usefulness of the highest temperature locations. Energy balance equations of the cooker and its components were introduced. Thermal heat exchange among surfaces depends on geometry and orientation of these surfaces, so shape factor was introduced in this work. Economic study on the cooker was carried out and comparison of the solar cooker operational cost with traditional gas cooker was established. Constructing air inlet and outlet gates in order to be used as drier, drying tests on some agricultural products were conducted. The drying cost of some agricultural products was calculated and the drier contour maps were introduced. The effect of using the solar cooker on the environmental protection from fossil fuels exhausts was estimated.

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CONTENTS

Subject	Page
ACKNOWLEDGMENT -----	i
ABSTRACT -----	ii
CONTENTS -----	iii
LIST OF FIGURES -----	vii
LIST OF TABLES -----	x
NUMENCALTURE -----	xiv
INTRODUCTION -----	1
1. REVIEW OF LITERATURE -----	4
1-1 Environmental pollution -----	4
1-2 Effect of air pollution -----	5
1-3 Indoor air pollution -----	5
1.4 Solar energy -----	6
1.5 Application of solar energy -----	6
1.5.1 Solar cooker -----	8
1.5.2 Solar cookers types -----	11
1.5.3 Cooking temperature and time -----	15
1.5.4 Solar cooker energy balance equations -----	18
1.5.5 Shape factor -----	19
1.5.6 Thermal evaluation of the solar cooker -----	20
1.6 Solar dryers -----	23
1.6.1 Advantages of solar crop drying -----	30
1.6.2 Solar drying systems -----	31
A. Direct system -----	31
B. Indirect system -----	31
C. Mixed Mood (indirect & direct) -----	31
1.6.3 Moisture content and temperature of drying -----	35
1.6.4 Air movement -----	36
1.6.5 Drying time -----	36