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>Advances in Solar
>Thermal Food Processing

12-13-14 July 2023

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Conference Proceedings

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CIFP SOMESO, A CORUÑA, SPAIN

INSTITUTE OF ENGINEERING; UNIVERSITY OF ALGARVE
CAMPUS DA PENHA; FARO-PORTUGAL

Editors

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1-Introduction

Authors were invited to submit abstracts for consideration by the *Organizing Committee*. For each accepted abstract, the authors were invited to submit a full paper and a presentation file with audio recorded to be presented in CONSOLFOOD2023.
This document contains all of the *accepted* abstracts and full-length papers submitted for inclusion in CONSOLFOOD2023. It may be updated from time to time if papers are revised, or further full-length papers arising from submitted abstracts are received.
All of the submissions have been scrutinised by one or more members of the *Organizing and Scientific Committee*, but they have not necessarily been revised to accommodate suggestions made by the reviewers. Therefore, they should not necessarily be regarded as having been subjected to strict peer-review.

2-Getting further information

Authors may be contacted via the email address that appears under the title of each abstract or full-length paper. Where several email addresses appear, it is the convention that the name of the corresponding author bears an asterisk (*). If one name has an asterisk, please only contact that author.

3-Searching this document

All full papers and abstracts are listed in according to the programme of the conference sessions.

4-Copyright

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Octavio García Valladares, Instituto de Energias Renovables, Universidad Nacional Autónoma de México, México

Xabier Apaolaza Pagoaga, University of Málaga, Spain

6-Conference Sessions (cont.)

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CFD modeling and the performance evaluation of a mixed-mode forced convection solar tunnel dryer for curry and coriander leaves	Bhanudas B.Takale, Ranjit S. Patil	India
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A CASE FOR INCLUDING SOLAR DEHYDRATORS IN FOOD PROCESSING

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Abstract: The access of small-scale food producers and big agro-industry players to equipment is abyssal. The latter have access to well-developed and appropriate technology. In this article, one proposes a novel design for food dehydration equipment to serve small-scale producers, reducing their technological gap regarding dehydration. Equipment that dries more than 1000 kg daily is costly and consumes much energy. Lower capacity machines, up to 100 kg per day, are often one-off handcrafted projects built with reused materials without dimensioning supporting the design. They are usually not easily transportable and underperform: the drying chamber tends to overheat; the solar collector's area is usually 50% inferior to the required product quantity. One proposes a mobile dehydrator with a solar collector area 7 times larger than average, promoting moisture removal by naturally convected airflow at lower temperatures, reaching up to 4,5 m/s and 44,3 °C inside the entrance of the drying chamber. Under these flow conditions, the food's organoleptic properties are preserved compared to the often high-temperature drying handspun machines continually adopted by small-scale producers. The internal layout of the drying chamber was also changed to promote the increase of turbulence and reduce the existence of recirculation areas, thus facilitating the transfer of moisture from the food to the airflow. The expected result from implementing this novel design is avoiding food losses due to natural degradation by increasing the product's shelf life before transport and transformation. Solar equipment has zero operational costs, and all these advantages are expected to encourage small-scale dehydration technology.