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**5.8.18: Please read and respond...Journal of Renewable and Sustainable Energy:  
MS #RE-180983 Request to Review**

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rse-edoffice@aip.org &lt;rse-edoffice@aip.org&gt;

Tue, May 8, 2018 at 11:25 AM

Reply-To: rse-edoffice@aip.org

To: ekadewi@petra.ac.id

Dear Ekadewi Handoyo,

Would you be willing and available to review the below referenced manuscript, which has been submitted for possible publication in Journal of Renewable and Sustainable Energy:

Title: "Thermal efficiency and exergy enhancement of solar air heaters, comparative study and experimental investigation"

Author: Hicham El FEROUALI, Ahmed ZOUKIT, Toufiq EL KILALI, Said DOUBABI, and Najji ABDENOURI

The manuscript's abstract is:

This paper links between the geometric design of most classical configurations of solar air heaters (SAHs), their thermal performances and their appropriate application. To assess the performance of the SAHs; the temperature distributions of their components, the outlet air temperature, thermal and exergy efficiencies were considered. The optimization concerns mainly the absorber shape and the airflow direction. Therefore, single pass and counter flow double pass SAHs with flat plate; finned and V-corrugated absorbers, and SAH with external recycle were investigated. The overall aim is to single out the most suitable configurations for drying process and habitation heating. Modeling of the SAHs was based on solving the energy balance equations of the SAH's components using the implicit finite difference method. The numerical results showed that the thermal efficiency was significantly improved by the counter flow double pass mode by about 17.01% for SAHs with flat plate absorber and 9.03% for SAHs with V-corrugated absorber. Furthermore, the V-corrugated shape of the absorber increases the thermal and exergy efficiencies compared to the flat plate shape e.g. by respectively 8.66% and 1.27% at  $\dot{m}=0.025\text{kg}\cdot\text{s}^{-1}$ . In addition, the present study highlighted that the outlet air temperature and the thermal and exergy efficiencies could be enhanced by increasing the number of fins, and the optimal number of fins was found to be 24 per meter width of the SAH. Experimental studies were carried on a modular solar air heater. They showed the good capability of the developed model for predicting the thermal performance of the studied solar collectors. Besides, the studied SAHs could be assigned to three appropriate uses. Type A and Type C could be applied for drying aromatic and medicinal plants. Type B and D in forced convection and Type D in natural convection are more suitable for drying agri-food products. Finally, Type E and Type F in forced convection and Type B in natural convection are more appropriate for habitat heating.

I would be extremely grateful for your help in providing a review of the manuscript, in terms of its suitability for the journal, its scientific and technical merit, as well as the quality of its presentation.

If you are not personally available to review but have a student who is qualified to review the paper, please click ACCEPT using the link below; the instruction email will come to your email address and you will need to access the paper through your account in our submission system. You will need to upload your student's finished review, after you have reviewed and approved it. Alternatively, you can respond to this email with your student's name and email address and we will invite him/her separately.

If you agree to review this manuscript, I would ask for your comments within three weeks from your acceptance.

To ACCEPT or DECLINE the reviewer assignment, please go to the following URL:

<https://jrse.peerx-press.org/cgi-bin/main.plex?el=A3BQ4FqVw4A3HNWF1F5A9ftd3YaO7WpRnyB3I1mdTe1GwY>

If you have any questions or need more information, feel free to reply to this e-mail.

Thank you for your consideration and support of Journal of Renewable and Sustainable Energy.

Sincerely,

Mingheng Li, Associate Editor

Journal of Renewable and Sustainable Energy ([rse-edoffice@aip.org](mailto:rse-edoffice@aip.org))

5/27/2018

Petra Christian University Mail - 5.8.18: Please read and respond...Journal of Renewable and Sustainable Energy: MS #RE-180983 ...

P. Craig Taylor, Editor  
John A. Turner, Editor

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Ekadewi Handoyo <ekadewi@petra.ac.id>

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## JRSE: RE-180983 Review Received

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rse-edoffice@aip.org <rse-edoffice@aip.org>  
Reply-To: rse-edoffice@aip.org  
To: ekadewi@petra.ac.id

Sun, May 27, 2018 at 2:40 PM

Dear Dr. Handoyo,

Thank you for your review of the manuscript referenced below, which we have safely received:

Title: "Thermal efficiency and exergy enhancement of solar air heaters, comparative study and experimental investigation"

Author: Hicham EL FEROUALI, Ahmed ZOUKIT, Toufiq EL KILALI, Said DOUBABI, and Naji ABDENOURI  
[Manuscript #RE-180983],

A copy of this review is attached for your reference. If you uploaded your review - that exact file is attached.

Sincerely,

Mingheng Li

Journal of Renewable and Sustainable Energy ([rse-edoffice@aip.org](mailto:rse-edoffice@aip.org))  
P. Craig Taylor, Editor  
John A. Turner, Editor

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Manuscript #RE-180983:

Significantly advances the field or provides major insight: Yes

New contribution to the field: Major

High impact and of interest to a broad audience: Yes

Arguments are justified and clearly lead to the conclusions: Yes

Clearly organized and clearly written: Yes

Title is appropriate and likely to attract readers: Yes

Clear abstract that represents the contents of the manuscript: Yes

Clear tables figures and captions: Yes

Length of manuscript appropriate: Yes

Adequate references: Yes

Overall Rating: Publish in JRSE with mandatory revision (minor)

Review Revision (confidential): Yes

Remarks (Required):

In my opinion, it is an interesting and broad paper.

Below is my review for the Authors:

1. In all energy balance equations, Eq (2) to (6), (11) to (24): the temperature is time dependent. Why are the result not showing temperature as function of time? Could you give some graph showing the time dependent of temperature?

2. In type B SAH, does the fin's height equal to the channel's height, i.e.  $H_2$ ? If this is so, then the air flow is divided into many small channel. Is the equation still correct?
3. The thermo-physical parameters (in Table I to III) employed in numerical calculations are not the same with employed in experiments. Then, how do the experiments give validation for the numerical?
4. In Section 5. Experimental Validation, you mention that solar radiation and ambient temperature can be assumed constants (line 474). Yet, Fig. 17 shows the solar radiation and ambient temperature measured for two hours measurement. Why do you need these assumption?
5. The result in Table IV and V shows that the solar radiation is different. When solar radiation received by SAH (any type) is higher, then the outlet air temperature will be higher, too. For example, in Table V, the solar radiation,  $G$ , received by Type A is much lower than Type B or Type D. The lower efficiency might be because of the lower  $G$ , not the configuration/type of SAH.

Comments to the Editor:

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Ekadewi Handoyo &lt;ekadewi@petra.ac.id&gt;

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**JRSE: REVISED manuscript RE-180983R Review Instructions for JRSE**

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rse-edoffice@aip.org <rse-edoffice@aip.org>  
Reply-To: rse-edoffice@aip.org  
To: ekadewi@petra.ac.id

Mon, Jun 25, 2018 at 8:29 PM

Dear Dr. Handoyo,

Thank you for agreeing to review the revised manuscript "Thermal efficiency and exergy enhancement of solar air heaters, comparative study and experimental investigation" by Hicham EI FEROUALI, Ahmed ZOUKIT, Issam Salhi, Toufiq EL KILALI, Said DOUBABI, and Naji ABDENOURI [Manuscript #RE-180983R].

To access the manuscript, review form, and instructions please click on the link below.

<https://jrse.peerx-press.org/cgi-bin/main.plex?el=A5BQ6FqVw4B3HNWF1F3A9ftd3YaO7WpRnyB3I1mdTe1GwY>

Reviewers are kindly requested to consider the originality of the scientific work and to evaluate the scope of the manuscript with respect to the broad readership of the Journal. In particular the review form will rapidly allow you to provide feedback in the following areas:

- Quality of Article
- Importance of Findings
- Quality of Experiments
- Suitability for Journal
- Clarity of Presentation
- Understandable to Non-Specialists?
- Does Material Need to Be Added or Deleted?
- Clarity of Figures and Tables
- Is color essential?
- Overall Rating/Recommendation
- Publication Priority of Contribution
- Confidential Remarks to the handling editor
- Detailed Comments to the Author
- Points In Favor
- Points Detracting
- Do You Want to See the Revised Paper?

We request you submit your comments by 16-Jul-2018.

If you are unable to complete the review or expect significant delays, please contact me immediately via reply e-mail.

The contents of the manuscript are, of course, confidential until published.

Sincerely,

Mingheng Li

Journal of Renewable and Sustainable Energy ([rse-edoffice@aip.org](mailto:rse-edoffice@aip.org))  
P. Craig Taylor, Editor  
John A. Turner, Editor

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Ekadewi Handoyo <ekadewi@petra.ac.id>

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## JRSE: MS #RE-180983R Review Received for REVISED manuscript

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rse-edoffice@aip.org <rse-edoffice@aip.org>  
Reply-To: rse-edoffice@aip.org  
To: ekadewi@petra.ac.id

Mon, Jul 16, 2018 at 10:05 AM

Dear Dr. Handoyo:

Thank you for your review of the revised manuscript "Thermal efficiency and exergy enhancement of solar air heaters, comparative study and experimental investigation" by Hicham EI FEROUALI, Ahmed ZOUKIT, Issam Salhi, Toufiq EL KILALI, Said DOUBABI, and Naji ABDENOURI [Paper #RE-180983R], which we have safely received.

A copy of this review is attached for your reference. If you uploaded your review - that exact file is attached.

Sincerely,

Mingheng Li

Journal of Renewable and Sustainable Energy ([rse-edoffice@aip.org](mailto:rse-edoffice@aip.org))  
P. Craig Taylor, Editor  
John A. Turner, Editor

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Manuscript #RE-180983R:

Significantly advances the field or provides major insight: Yes

New contribution to the field: Major

High impact and of interest to a broad audience: Yes

Arguments are justified and clearly lead to the conclusions: Yes

Clearly organized and clearly written: Yes

Title is appropriate and likely to attract readers: Yes

Clear abstract that represents the contents of the manuscript: Yes

Clear tables figures and captions: Yes

Length of manuscript appropriate: Yes

Adequate references: Yes

Overall Rating: Publish in JRSE as is

Remarks (Required):  
well done...

Comments to the Editor:  
The paper has been revised well.

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Home > Journal of Renewable and Sustainable Energy > Volume 10, Issue 4 > 10.1063/1.5039306

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🔒 No Access • Submitted: 07 May 2018 • Accepted: 16 July 2018 • Published Online: 24 August 2018

## Thermal efficiency and exergy enhancement of solar air heaters, comparative study and experimental investigation

Journal of Renewable and Sustainable Energy 10, 043709 (2018); <https://doi.org/10.1063/1.5039306>

Hicham El Ferouali<sup>1</sup>, Ahmed Zoukit<sup>1</sup>, Issam Salhi<sup>1</sup>, Toufiq El Kilali<sup>2</sup>, Said Doubabi<sup>1</sup>, and Naji Abdenouri<sup>1,a)</sup>

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- TOPICS**
- Thermal efficiency
  - Thermal instruments
  - Solar collectors
  - Mathematical modeling
  - Energy efficiency
  - Finite difference methods

### ABSTRACT

This paper links the geometric design of most classical configurations of solar air heaters (SAHs), their thermal performances, and their appropriate application. The optimization concerns mainly the absorber shape and the airflow direction. Therefore, single pass and counter flow double pass SAHs with flat plate, finned, and V-corrugated absorbers and SAH with an external recycle were investigated. The overall aim is to single out the most suitable configurations for the drying process and habitation heating. Modeling of the SAHs was based on solving the energy balance equations of the SAH's components. The numerical results showed that the thermal efficiency was significantly improved by the counter flow double pass mode by about 17.01% for SAHs with a flat plate absorber and 9.03% for SAHs

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