



Guillermo Barrios del Valle <gbv@ier.unam.mx>

Invitation to review revision for Energy & Buildings

1 message

Energy & Buildings <em@editorialmanager.com>
Reply-To: Energy & Buildings <support@elsevier.com>
To: Guillermo Barrios del Valle <gbv@ier.unam.mx>

Fri, Aug 25, 2023 at 4:08 PM

Manuscript Number: ENB-D-23-01990R1

Investigation of indicators for personal exposure and occupancy in offices by using smart sensors

Dear Dr Barrios del Valle,

I would like to invite you to review the above referenced revised manuscript, as you kindly reviewed the previous version of this manuscript. Anonymised reviewer comments to author for the previous version are included below.

You should treat this invitation, the manuscript and your review (as well as other reviewer comments shared with you) as confidential. You must not share your review or information about the review process with anyone without the agreement of the editors and authors involved, irrespective of the publication outcome. If the manuscript is rejected by this journal and the author agrees that the submission be transferred to another Elsevier journal via the Article Transfer Service, we may securely transfer your reviewer comments and name/contact details to the receiving journal editor for their peer review purposes.

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Since timely reviews are of utmost importance to authors, I would appreciate receiving your review within 8 days of accepting this invitation.

I hope you will be able to review this manuscript. Thank you in advance for your contribution and time.

As a reviewer you are entitled to complimentary access to references, abstracts, and full-text articles on ScienceDirect and Scopus for 30 days. Full details on how to claim your access via Reviewer Hub (reviewerhub.elsevier.com) will be provided upon your acceptance of this invitation to review.

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Kind regards,

Mohamed Ouf
Managing Guest Editor
Energy & Buildings

Comments to author for previous version:

Reviewer 1: (Previous Version)

This study investigated indicators for personal exposure and occupancy in two offices by using smart sensors. The research topic is interesting. I recommend the publication of this paper subject to the following major revisions.

1. Please define "smart sensors" and elaborate what functions of smart sensors are needed so that they can be used to provide the indicators for personal exposure and occupancy.
2. The rationale of using IAQ sensors for occupancy is to avoid privacy issues induced by the camera-based systems. The question would be why not using other occupancy sensors that are not using camera?
3. A follow-up question is: would it be more reasonable to test whether those occupancy sensors such as microwave-based or acoustic-based sensors can provide better results and how their placement would influence the results? If they do not work well, then the results from this study would be very useful.
4. Would air distribution influence the results? For instance, if an office uses displacement ventilation, it is likely that a sensor installed above the occupant can better represent personal exposure due to the buoyancy effects.
5. Some grammar errors are found.

Reviewer 2: (Previous Version)

The manuscript (ENB-D-23-01990) investigated the optimal set of indicators for characterizing the human exposure and occupancy in office environments via a two-week field measurement and a subsequent correlation analysis. Generally, the manuscript was well-written and easy-to-follow, the methodology (for both experiments and result analysis) was rigorous and scientifically sound, and the conclusions were fully supported by the informative results presented in the manuscript. This study should be helpful for the development of smart building monitoring and ventilation control in the future, whose topic fits very well with the scope of the journal (Energy & Buildings). The reviewer could not even find any major comments for the improvement of the manuscript after carefully reading it for two times. Therefore, I would like to suggest accepting the manuscript after addressing the following two minor comments,

1. It is a little bit pity that the experiments did not monitor the environmental factors outside the buildings (e.g., temperature, humidity, CO₂ and PM concentrations), which may also have significant effects on the indoor environmental quality. The authors are suggested to add some clarifications in the limitation section (4.2 Study limitations).
2. Please give the full name of abbreviation while it first appears, e.g., Page 3 Line 71, the full name of CONTAM is missing.

Reviewer 3: (Previous Version)

An interesting study has been presented here. You have to avoid using first person e.g. 'we', 'our' etc (please refer to the attached text with further comments included). In general it is a well written paper, timely. I would imagine that there are many such types of personal sensors offered recently (and other studies conducted). I would like to see more information regarding the financial implications of such sensors on both the users along with the building owners. In addition further benefits of gathering such data and its importance again for both users and building owner. The impact is not stressed enough in your research from both positive and perhaps negative perspective. Please refer to my further comments and suggestions in the attached text.

Reviewer 4: (Previous Version)

The authors present the implementation of a decision tree to approximate inhalation exposure and occupancy in office environment. To accomplish, they carried out a 2-week campaign in two buildings where real-time measurements of air temperature, CO₂, relative humidity and 2.5 and 10 PM particles were carried out. They found that the use of a CO₂ sensor can be enough to estimate the occupancy at room and building levels for spaces with prolonged occupancy. The authors conclude also that their findings may not be generalizable to other types of buildings.

The topic is relevant for the Journal and states the challenges in predicting CO₂ exposure, occupancy and in the design of experimental campaigns and data collection for the development of predicting models.

We recommend the following major revisions:

1. The need to predict building occupancy should be explained, not enough context has been provided.
2. A description of the data should be provided, after the cleaning and resampling, how many data was left, how is the number of data after the split.
3. The correlation analysis from section 3.3 must be justified for the DT implementation or removed. Also, negative values of the correlation heat map should be explained, sensor failure ? ventilation ? [
4. The authors state that occupancy triggers strong spatio temporal gradients of CO₂ and PM₁₀, but this is already known.
5. The authors conclude that body posture, activity type and intensity were strongly linked to personal exposure. From figure 5 we can see the list of indicators ranked in order of importance and RH is in third place, which seems to contradict this conclusion. If the graph was interpreted incorrectly, it should be addressed.
6. Finally, the authors should not cite so much figures from supplemental material, the understanding of the research must be complete in the paper.

Reviewer 5: (Previous Version)

In this paper a simulation study on investigation of indicators for personal exposure and occupancy in offices by using smart sensors, is made. Before being published, I suggest some improvements in the presentation and in the content.

More information about the contaminants limits should be added.

More details about the building and analysed compartments should be also added. 3D buildings and compartments. Locations of the inlet and outlet ventilation system and the measuring points should be added.

More details about the personal (via personalized vests with sensors for personal exposure detection) and room (via stationary sensors at sidewalls and office desks) should be also added.

Add more details about the measuring sensors. The datalogger and others acquisitions systems also should be more detailed.

More details about the future works should be also added.

More information and support

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