



Guillermo Barrios del Valle &lt;gbv@ier.unam.mx&gt;

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## Invitation to review for Energy & Buildings

1 message

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

Fri, Jun 10, 2022 at 6:45 AM

Manuscript Number: ENB-D-22-01340

Flexible air curtain optimization for isolating tobacco odor in large-scale space.

Xiaochuan Li; Jifeng Jia; Mingrui Zhang; Li Wang; Xi Chang

Dear Dr Barrios del Valle,

I would like to invite you to review the above referenced manuscript submitted by Prof. Xiaochuan Li , as I believe it falls within your expertise and interest. The abstract for this manuscript is included below.

You should treat this invitation, the manuscript and your review 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, even after publication. This also applies to other reviewers' "comments to author" which are shared with you on decision (and vice versa).

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Kind regards,

Yinping Zhang

Associate Editor

## Energy &amp; Buildings

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## Abstract:

Poor isolation between mixed and roasted tobacco storage cabinets in tobacco production enterprises deteriorates the tobacco aroma due to mixing different types of tobacco odors, mainly spread through dust, aerosols, gaseous substances, etc. Mitigating this problem requires re-adjustment of the storage process resulting in huge costs. This paper proposed the alternative idea of flexible isolation of two types of storage cabinets using air curtains. Numerical simulations were performed to study the effects of the airflow collection device width (  $H$  ), the inlet and extraction air velocities (  $V_s$  and  $V_c$  ) on the air curtain airflow path and collection, and the odor isolation efficiency.

At small  $H$  values, the air curtain airflow path was split into three sections leading to the two types of storage cabinets and inside the airflow collection device, respectively. As  $V_s$  increased and  $V_c$  decreased, the pressure difference at the entrance of the airflow collection device dropped, the airflow turbulence effect intensified, in contrast to the coupling effect between the air curtain airflow and the extraction airflow. This expanded the vortex area, deteriorating the air curtain airflow collection efficiency. At high  $V_s$  and  $V_c$  values, the thickness and range of the air curtain increased, improving the odor isolation efficiency. The optimal parameters (  $V_s = 11$  m/s,  $V_c = 0.4$  m/s, and  $H = 2$  m) provided the air curtain airflow collection efficiency of 99.01%, the odor isolation efficiency of 94.6%. The results obtained are considered instrumental in practical applications.

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