# Article information:

The viability of double-skin façade systems in the 21st century: A systematic review and meta-analysis of the nexus of factors affecting ventilation and thermal performance, and building integration - ScienceDirect
<https://www.sciencedirect.com/science/article/pii/S0360132322011003>

# Article summary:

1. The engineering and construction industry is the world's largest consumer of raw materials and the built environment consumes 30-40% of global energy demand and produces 40-50% of world carbon emissions.

2. Double-skin façade (DSF) systems can provide natural ventilation and passive heating/cooling, reducing energy consumption by up to 40% compared to air-conditioned buildings.

3. DSF systems are bespoke to individual climates, with warm temperate climates being the most researched area, but there is a current research gap in colder climates with predominant heating requirements.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article "The viability of double-skin façade systems in the 21st century" provides a comprehensive review of the factors affecting the ventilation and thermal performance of double skin facades (DSF) and their integration with buildings. The article highlights the need for energy-efficient building technologies to combat global carbon emissions, which are primarily produced by the built environment. The article also emphasizes the importance of natural ventilation in buildings, especially in light of recent findings on how Covid-19 spreads more easily in mechanically ventilated spaces.

One potential bias in this article is that it focuses primarily on DSF technology as a solution to energy efficiency and natural ventilation. While DSF technology has its advantages, such as reducing energy consumption and improving indoor air quality, it may not be suitable for all building types or climates. The article acknowledges that DSF systems are bespoke to individual climates but does not explore alternative solutions or technologies that may be more appropriate for certain building types or locations.

Another potential bias is that the article presents DSF technology as a viable solution without fully exploring its limitations or risks. For example, while DSF systems can reduce energy consumption, they may also increase construction costs and require ongoing maintenance. Additionally, there may be concerns about noise pollution from increased airflow through the cavity and potential issues with condensation within the cavity.

The article also lacks exploration of counterarguments against DSF technology. For example, some researchers have argued that natural ventilation alone may not be sufficient to maintain indoor air quality in highly polluted urban environments. Additionally, some argue that passive cooling techniques such as shading devices or green roofs may be more effective than DSF systems in reducing heat gain.

Overall, while this article provides a comprehensive review of DSF technology's benefits and limitations regarding natural ventilation and thermal performance, it could benefit from exploring alternative solutions and addressing potential risks associated with this technology.

# Topics for further research:

* Alternative solutions for energy-efficient building technologies
* Passive cooling techniques for reducing heat gain
* Indoor air quality in highly polluted urban environments
* Risks and limitations of double skin facade systems
* Noise pollution from increased airflow through the cavity
* Condensation issues within the cavity of double skin facade systems

# Report location:

<https://www.fullpicture.app/item/77364c347131b7f6792a94aed7ae745c>