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| Journal Name: | **Advances in Research** |
| Manuscript Number: | **Ms\_AIR\_131432** |
| Title of the Manuscript: | **Review of research on effects of steam curing on concrete properties** |
| Type of the Article | **Review Article** |

PART 1: Comments

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|  | **Reviewer’s comment**  **Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | **Author’s Feedback** *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.** | This paper provides a review of the effect of steam curing on concrete properties for fly ash-based concrete. Reviews contribute to optimizing curing conditions (temperature and duration range) to improve concrete durability and strength performance and concrete microstructure. The authors also address the potential negative effects of high-temperature steam curing, offering insights into mitigating this issue through the use of additional cementitious materials (fly ash and slag). |  |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | The current title is okay but could be more specific. Suggested title “Effects of Steam Curing on Fly Ash-Based Concrete Performance: A Review”. | Effects of Steam Curing on Fly Ash-Based Concrete Performance: A Review.  adopted |
| **Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.** | The abstract briefly mentions the importance of the study, but research gaps need to be better identified. | **Abstract：**Steam curing is a method used to increase the strength of concrete at an early stage. Steam curing is based on applying hot water vapor at a certain temperature, and determining its constant temperature time and maximum temperature according to the characteristics, cost and production cycle of the target concrete. As a kind of cementing material, fly ash is more and more used in concrete. This study summarizes the previous literature on the effect of steam curing system on the performance of fly ash based concrete. The increase of fly ash content has obvious negative effects on the early compressive strength, splitting tensile strength and elastic modulus of concrete, while the early high temperature curing can significantly improve the early mechanical properties of fly ash based concrete. Concrete exposed to steam curing at low temperatures of 45°C to 80°C and for longer periods of time within a 24-hour cycle can achieve better concrete performance. By studying the effect of steam curing on fly ash base concrete, a suitable curing scheme is developed and applied in practical engineering. |
| **Is the manuscript scientifically, correct? Please write here.** | The manuscript is scientifically sound by presenting evidence-based findings from the peer-reviewed literature. However, it is not clear whether different studies agree or not if there are conflicting findings. The literature only presents individual studies and their findings but does not compare or strengthen conclusions by citing several researchers who have found similar results. | **3 Conclusion**  This paper reports the effect of steam curing on the properties of fly ash based concrete. The following conclusions can be drawn:  (1) The early strength of the concrete with steam curing is obviously improved, and the selection of appropriate steam curing system makes the fly ash based concrete obtain better compressive strength. Steam curing accelerates the early hydration of concrete and improves the mechanical properties of concrete to a certain extent.  (2) At the temperature of 60℃, the compressive strength of the concrete with the same amount of fly ash replaced the reference cement is lower than that of the reference concrete during the age of 1 to 90 days; The compressive strength of each concrete after 7 days of age showed a decreasing trend with the increase of steaming temperature.  (3) The phenomenon of delayed formation of ettringite caused by high temperature evaporation is one of the reasons for the poor durability of steam cured concrete. The addition of mineral admixtures can effectively alleviate this phenomenon, and the inhibition effect of fly ash on volume expansion is greater than that of slag. The addition of mineral admixtures can greatly improve the chloride ion permeability resistance and volume stability of the steamed concrete, and greatly enhance the durability of the steamed concrete. |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.** | References are recent references from 2022–2024 and relevant. However, it has 17 references, which is low for a review paper. | To increase to 21 |
| **Is the language/English quality of the article suitable for scholarly communications?** | Language and grammar are generally appropriate for scholarity communication but there are minor mistakes and awkward phrases that could be improved. | Checked modification |

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| **PART 2:** | | |
|  | **Reviewer’s comment** | **Author’s comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Are there ethical issues in this manuscript?** | *(If yes, Kindly please write down the ethical issues here in details)* |  |