This paper presents a comprehensive thermodynamic analysis of different configurations for producing industrial steam using geothermal energy coupled with high-temperature heat pumps. The authors have developed a simplified modeling approach to compare water-based and supercritical CO2-based systems under various geological conditions. The work is timely and relevant given the increasing interest in decarbonizing industrial heat production. The methodology is sound and the results provide valuable insights into the potential performance of these systems. However, there are several areas where the manuscript could be improved to enhance its impact and clarity. The authors have made a significant contribution to the field, but more attention to practical implications and some clarifications in the methodology would strengthen the paper considerably.

1. The introduction provides a good overview of the topic, but could be strengthened in several ways. **The authors should more clearly state the specific research questions or hypotheses being addressed.** A stronger rationale for the simplified modeling approach used would help justify the methodology. Additionally, **including a brief review of previous work on geothermal heat pumps** **for industrial applications** would better contextualize the current study within the existing literature.

A dedicated paragraph has been added to clarify the novelty of the study and the research question addressed. Regarding the second part of the question, further analysis of the literature indicates that, to our knowledge, there is only one other study, a conference paper which has been cited, that directly addresses the use of geothermal resources to power a heat pump for industrial applications. As highlighted in the review, there are numerous papers and significant industrial developments related to high-temperature heat pumps for industrial use, as well as geothermal-based heat pumps for lower temperature applications.

1. The modeling approach is generally well-described, but some aspects require clarification to ensure reproducibility and to justify the choices made. **The authors should provide more justification for their simplifying assumptions, particularly for the borehole heat exchanger model**. More details on the optimization procedure, **including the rationale for the objective function used**, would be beneficial. It would also be helpful to **clarify how the different heat pump cycle configurations were modeled and optimized.**

The rationale behind the chosen simplification of the well has been explicated at the end of the model description. The section containing the description of the optimization method has been mostly rewritten for clarity. The description of the surface cycles has been modified to clarify the modelling. As for the optimization, the optimization procedure described above was general (i.e. it was meant to identify the optimal parameter both of the well and of the surface equipment), this was clarified and for each model it was clearly pointed out the parameters that are going to be optimized.

1. The results are presented logically, but there is room for improvement in their analysis and interpretation. **The authors should consider including error bars or uncertainty analysis where appropriate, especially for the COP and mass flow ratio estimates**. The discussion on the **practical implications of the results** could be expanded, including potential challenges in implementing these systems. A more **extensive comparison** of the obtained results **with relevant literature on geothermal heat pumps and industrial steam production** would strengthen the paper's contribution to the field.

Regarding the error bars, I don’t think they are appropriate given the fact that all the graphs are resulting from deterministic calculations.

1. The figures are generally clear and informative, but some improvements could enhance their effectiveness. **Font sizes in some figures (e.g., Fig. 8, 9, 10) should be increased** for better readability. A **consistent color scheme across** all figures would facilitate easier comparison. More descriptive captions would help readers interpret the results without constantly referring to the main text.
2. The conclusions summarize the main findings well, but could be strengthened to better highlight the significance of the work. **The authors should more explicitly state the novelty of their approach and results.** A discussion of **potential limitations and areas for future research would provide a more balanced perspective**. Finally, **clearer recommendations for system designers and policymakers** based on the results would enhance the practical impact of the study.

This study proposed a new approach to produce steam at 10-15 bar based on mid-low temperature geothermal resources working with water or s-CO2 heat pump systems. It develops a simplified procedure to obtain preliminary screening results. It is found that water-based systems are more promising than sCO2 cycles from a thermodynamic perspective. It provides reference for Geothermal energy development.

1. Abstract is recommended to **write as a paragraph**.

The abstract has been corrected accordingly

1. The **innovation point is not very clear**, so it is suggested that to **clear the research gap and point out the significance of the research in this paper**.

A specific paragraph has been included in the introduction

1. The method part **lacks model verification**.

Model verification has been improved and is in the appendix

1. The Results part is like the experimental report **without discussion**.
2. **The conclusion could be more concise**.
3. Please pay attention to the writing format of this articles, **many places are not uniform**.