Dear Reviewer, thank you for your valuable comments. They certainly improve the quality of our article. Below is a list of changes that have been made to the article and responses to your comments.

Q1: This paper presents a very preliminary stage within a research project. There are many expressions like "probably", "likely", "possibility", "is supposed to", with lack of hypotheses and explanations.

A1: The answer to this question is partly below (in the next question). There are very few results of such studies. Internal reforming in the cell works well for SOFC fuel cells (on different fuels) and it is worse for MCFC fuel cells (due to the lower operating temperature). For MCFCs, steam reforming with alcohols works very well, but methane is a problem (without the use of additional reformers).

The hypothesis is presented in the new subchapter "1.1. Novelty and the objective of the research".

Q2: The research problem is not stated. Both the title and abstract misrepresent the results indicated in the problem. It is not clear if the objective of the research is a new mathematical model, or the validation of such model, or to optimize Molten Carbonate Fuel Cell operational conditions.

A2: In the experimental results published so far on this topic [1], molten carbonate fuel cell was powered by using simulated post-reforming gas (not methane and steam). The first successful experiment on methane steam reforming inside the MCFC fuel cell was presented in [2]. This was possible thanks to the use of a commercial catalyst in the anode channel of the fuel cell.

This article presents a similar experiment, but without using additional catalyst. Therefore, the possibility of this process at higher temperatures was investigated.

The mathematical model presented in the article is only an addition to the main goal, which is to confirm or deny the possibility of operation of the methane steam reforming process in the MCFC fuel cell without the additional catalyst.

[1] R. Bove and P. Lunghi, "Experimental comparison of MCFC performance using three different biogas types and methane," J. Power Sources, vol. 145, no. 2, 2005

[2] L. Szablowski, O. Dybinski, A. Szczesniak, and J. Milewski, "Mathematical Model of Steam Reforming in the Anode Channel of a Molten Carbonate Fuel Cell," Energies, vol. 15, no. 2, 2022

Q3: Methodology is missing.

A3: Thank you for the comment. We have added explanation section section 2.1 describing the idea of methodology and information that this is mostly presented in further sections.

Q4: Discussion beyond mere description is missing as well.

A4: Dear Reviewer, we have expanded the discussion on experimental research.

The quality of written and visual aspects also indicates a very early stage developing the firrst draft of a paper.

Q5: Figures´captions are unclear.

A5: It has been corrected.

Q6: Methane-water ratios are not explained adequately.

A6: Dear Reviewer, in the article I also referred it to steam to carbon ratio S/C. Maybe now it will be more understandable for the reader.

Q7: Regarding the model, why are not all experiments suitable for modelling comparison?

A7: During experimental data postprocessing, we have forgotten to remove the faulty experimental data. We have cleared the data in the section "Experimental research" during this revision. The faulty data corresponds to the highest current densities at the lowest cell voltage, e.g. orange line - the last measurement corresponding to the typical fuel cell curve is ca. 0.75 V, and the points below 0.4 V represent the faulty experimental data, where no significant electrochemical reactions occur. Thus we removed the data which does not correspond to the fuel cell curve and those data were not used for the model validation.

In summary, this promising research requires more time and further conceptualization to settle as a research output.

A: Thank you