Reviewer1

This paper constructed a water balance model and calculated the internal water content and flowing out water of the 100 kW fuel cell system based on different operating temperature, air metering ratio. Overall, this paper has some research significance and meets the topic and publication requirements of Energies journal, but some important issues should be addressed as follows:

1. The abstract and conclusion should be rewritten, which should include research objective, overall method, quantitative and qualitative analysis results, conclusions.

2. For hydrothermal management, modelling and health diagnostics of fuel cells, there are many other important papers such as https://doi.org/10.1002/fuce.202200121, https://doi.org/10.1016/j.applthermaleng.2024.123719, https://doi.org/10.1016/j.ijhydene.2023.10.019 that have been described and need to be cited and analyzed in the introduction.

3. For the test platform in Fig.1, the architecture and main parameters of fuel cell system should be clearly described.

4. For the equations (1)-(5) in the description of water balance model, they should be inserted with cited references.

5. In Table 1, why the air metering ratio in 120A (2,2.2,2.4,2.6,2.8) is set to be different from that in 210A and 300A(1.8,2,2.2,2.4)?

6. To calculate the water flow out of the FC system, have you considered the effect of purge valve operation on it? It should be analyzed.

7. Fig.7 and Fig.8 are not clear, they should be replaced with high quality figures.

8. For the references, many journal names are missing and need to be carefully checked and completed individually. Such as references [20],[21],[29],[30], and so on.

Reviewer 2

The manuscript "Research on water status detection method of high-power fuel cell system based on water balance model" written by Yiyu Zhong et al. is a rich and completed work. The research studied the hydration state of high-power fuel cell systems, developed a water balance model, and validated it. I think the work fits the scope of Energies and should be considered to be published. There are only a few suggestions.

1. Line 266: there is [h] appearing. Is that a reference?

2. It will be good for the reader to understand the paper if the authors can explain why 120 A, 210 A, and 300 A were chosen for the study.

3. The resolution of Figure 8 is bad. Also, the (b) is hidden behind the figure (same as Figure 7).

4. As the authors mentioned (Line 392-398), a full cell stack model will be needed to get the optimized working conditions. Any related references that showed the capabilities of the full cell stack model can be cited here?

5. Most of the references in the manuscript are relatively old. Any new progress in the related fields?