Review Form 3

Journal Name:	**Journal of Energy Research and Reviews**
Manuscript Number:	**Ms_JENRR_123670**
Title of the Manuscript:	**Research progress and challenges of hydrogen-ammonia hybrid fuel engines**
Type of the Article	**Review Article**

Review Form 3

PART 1: Review Comments

Compulsory REVISION comments	**Reviewer's comment**	**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. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.	**This manuscript reviews research progress and challenges in hydrogen-ammonia hybrid fuel engines, important for the scientific community. The paper thoroughly examines hydrogen and ammonia as fuel sources, as well as their potential as a hybrid fuel. It provides insights on technology advancements by automakers and research institutions globally.** **The manuscript provides a detailed analysis of hydrogen-ammonia engine combustion, emission control, and performance optimization. It synthesizes research findings for future studies in this field. The paper also outlines important challenges and future research areas to guide future work in alternative fuel technologies.** **However, the manuscript could be improved by including more quantitative comparisons between fuel options and clearer recommendations for research. More specific suggestions for addressing technical limitations would enhance its value to the scientific community.**	
Is the title of the article suitable? **(If not please suggest an alternative title)**	**I agree that the title "Research progress and challenges of hydrogen-ammonia hybrid fuel engines" is suitable for this research**	
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 provides a clear overview of the paper's content, touching on all major aspects of the research without going into excessive detail. It effectively communicates the purpose, scope, and main findings of the study, making it a comprehensive summary of the full article.**	
Are subsections and structure of the manuscript appropriate?	**Upon evaluation of the manuscript, it is noted that the general structure and subsections are deemed acceptable, yet improvements in organization and clarity are still warranted. Here is an examination of the manuscript's organization:** **1. Introduction:** **The paper commences with an introductory section that offers a comprehensive examination of the subject matter and delineates the extent of the review. This is suitable for a review article.** **2. Main Sections:** **- Research status of hydrogen fuel engines** **- Research status of ammonia fuel engines** **- Research status of hydrogen/ammonia fuel engines** **These main sections logically cover the key areas of the research topic.** **3. Subsections are not clearly defined within the main sections of the manuscript. Including subsections would enhance the organization and readability of the document. For instance, the section on hydrogen fuel engines could be segmented into:** **- Historical development** **- Combustion characteristic** **- Performance optimization** **- Emission control** **- Challenges and solutions** **4. The paper concludes with a summary of the main points and a discussion on potential future research avenues, which is fitting.**	

Review Form 3

	Recommendations for enhancement are being offered. **1. Add clear subsections within each main section to better organize the content.** **2. Include a "Methods" or "Literature Review Methodology" section to explain how the literature was selected and analyzed.** **3. Consider adding a "Discussion" section before the conclusion to synthesize the findings and highlight key insights.** **4. Use consistent formatting for headers and subheaders throughout the manuscript.** **5. Ensure a smooth transition between sections and maintain a logical flow of information.** **On the whole, incorporating these suggestions would improve the organization of the manuscript and facilitate easier navigation for readers, despite the already appropriate basic structure.**	
Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.	**This manuscript shows scientific accuracy and technical soundness in key areas.** **1. The paper offers a thorough review of research on hydrogen engines, ammonia engines, and hydrogen-ammonia hybrid engines, including many relevant studies and experimental results. This literature review sets a strong foundation for the discussion.** **2. Detailed technical specifics: The manuscript presents exact engine parameters, combustion characteristics, and emission data. For example, it discusses Geely Automobile's 46.11% thermal efficiency in their hydrogen engine and different engine models by manufacturers.** **3. The paper discusses challenges with hydrogen and ammonia engines, including emissions and combustion issues. This approach shows scientific rigor.** **4. The manuscript discusses research on reducing NOx emissions in hydrogen engines using EGR and water injection, as well as improving combustion performance by blending ammonia with other fuels. This emphasis on problem-solving strengthens the paper's technical validity.**	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. **-**	**Based on my review of the manuscript, the references appear to be generally sufficient and recent. However, I have a few suggestions to potentially enhance the reference list:** **1. The paper covers research up to 2022-2023, which is current. Given the fast pace of hydrogen and ammonia fuel research, including recent publications from 2023-2024 could be helpful.** **2. The paper discusses hydrogen and ammonia engines but could benefit from more references in specific areas.** **- Recent advancements in ammonia cracking for hydrogen generation on vehicles.** **- Recent advances in ammonia fuel cell technology.** **- Comparing hydrogen and ammonia as energy carriers was analyzed recently.** **- Latest projects testing ammonia-fueled engines.**	

	3. **The paper would benefit from including review articles along with the primary research papers.** 4. **Because this research area is global, it's important to include references from various research groups worldwide for a wider perspective.** 5. **Including references from major energy organizations such as the International Energy Agency (IEA) or the Hydrogen Council can provide additional context on the energy landscape.** 6. **Include relevant patents and technical standards for hydrogen and ammonia fuel systems for practical implementation.** **Overall, these additions could enhance the review. Base the decision on including more references on their relevance to the paper's main focus and the journal's guidelines on reference numbers.**	
Minor REVISION comments **Is the language/English quality of the article suitable for scholarly communications?**	The manuscript has suitable language for scholarly communication, but improvements are needed in some areas. Areas to improve: 1. There are some grammar errors and awkward phrasings that could be fixed. For example, "tempering" is often used when "pre-ignition" would be a better fit for engines. 2. Some sentences are too long and complicated, making them hard to understand. Breaking these into shorter, focused sentences would enhance readability. 3. There are some tense inconsistencies when discussing past research. Consistent tense improves clarity. 4. Some paragraphs contain a lot of technical information. Adding transition sentences could improve flow. 5. Sometimes informal language should be replaced with more scholarly phrasing. 6. Some acronyms are used without being defined, which may confuse unfamiliar readers. The language is suitable for scholarly communication but could be improved for better readability and professionalism.	
Optional/General comments	Upon my examination of the manuscript, no apparent conflicting interests have been disclosed or observed. The paper is a review article summarizing research on hydrogen and ammonia fuel engines, and does not seem to involve original experimental work or funding from industry sources that would create conflicts of interest. Based on my review of the manuscript, there do not appear to be any significant ethical issues present.	

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)*	

Review Form 3

Reviewer Details:

Name:	**Kyungrok Kim**
Department, University & Country	**NSB Group, Germany**