

AMON: Strategic Insights into Non-Carbon Energy: Comparative Analysis of Hydrogen and Ammonia in Solid Oxide Fuel Cell

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Abstract (4-6 lines, 500-700 letters incl. spaces)

Recent shifts in global climate patterns, marked by rising sea levels and increased temperatures, are largely due to CO₂ emissions from fossil fuel combustion. Transitioning to renewable energy sources is crucial to mitigate these effects. Solid Oxide Fuel Cells (SOFCs), which efficiently produce electricity and can switch between energy storage and supply, are well-suited to stabilize the power grid affected by renewable energy variability. This study focuses on developing an SOFC system using ammonia—a carbon-free fuel with high energy density and existing infrastructure. It aims to model and evaluate the system's performance, particularly in electricity generation and efficiency, and to compare it with hydrogen-based SOFCs.
