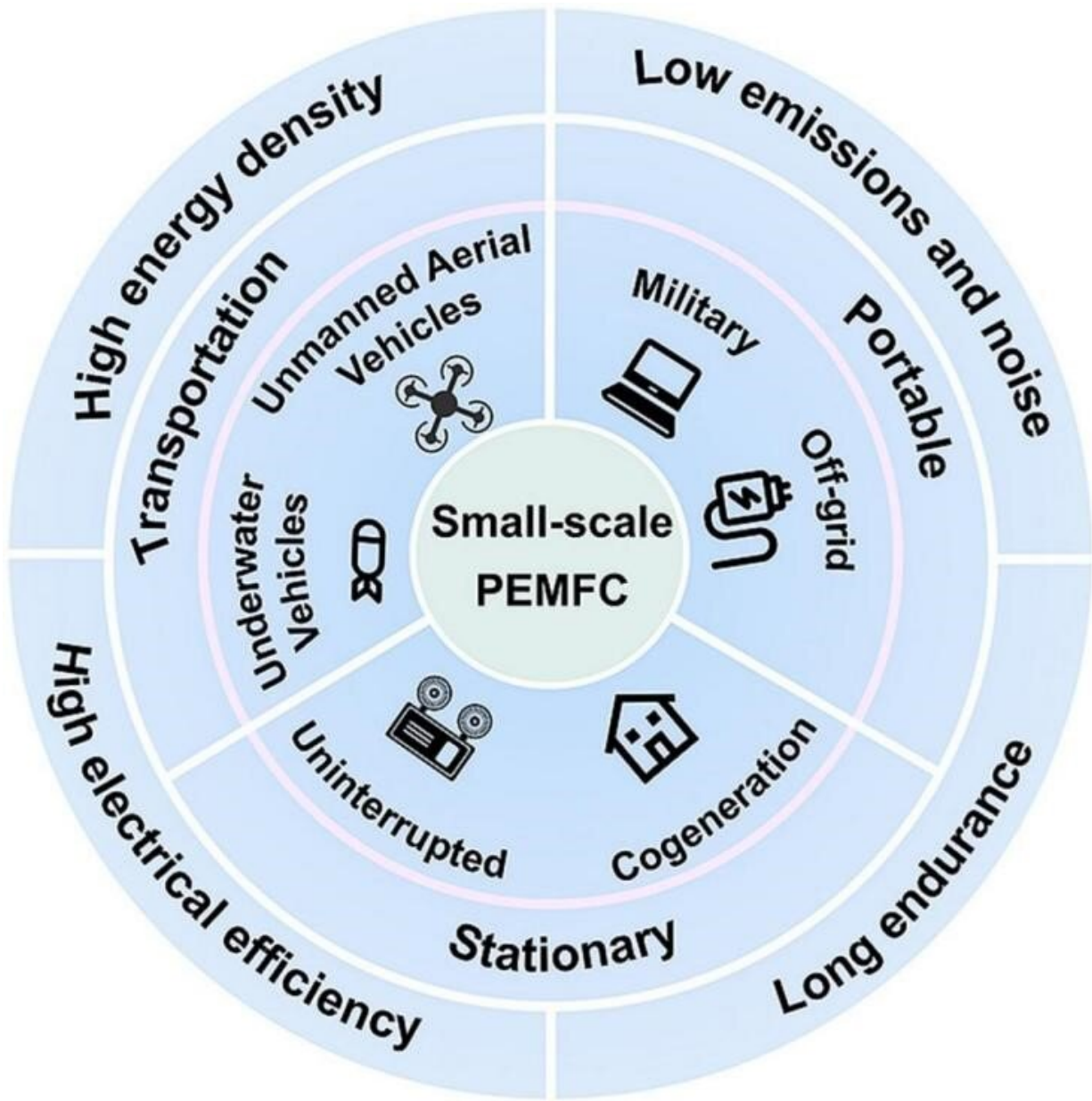


Small-scale proton exchange membrane fuel cells: A challenging but promising path toward clean energy

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A review by Tianjin University researchers provides a holistic overview of the applications of small-scale PEMFCs in transportation, and stationary and portable power generation fields, including essential strategies to improve their efficiency and marketability. Credit: *Energy Reviews* (2023). DOI: 10.1016/j.enrev.2023.100017

Increasing awareness of emerging environmental and climate change effects has expedited the global commercialization of clean energy. Naturally, the demand for powering up several small-scale and low power devices has increased. However, the small-scale storage of electricity has encountered bottlenecks, encouraging the possibility of generating electricity from hydrogen, using fuel cells.

Proton exchange membrane fuel cells (PEMFCs) are promising electrochemical cells that convert the chemical energy of fuel into [electrical energy](#). PEMFCs are used for a range of applications, but their unique attributes, including high energy densities, low pollution emissions, and low operating temperatures, make them favorable for small-scale applications.

In particular, the small-scale PEMFC (

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