

Clean Energy Fusion

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Fusion energy has been a long-held dream of not just scientists, but also the general public, as a clean, safe, and abundant energy source. Many academic institutions, national labs, and private companies have been and are currently working to generate more power than the amount needed to operate the device. Although progress was slow in the early 2000s, in recent years, the fusion industry has been revitalized and attracted nearly \$3 billion in investment in 2022 alone. Avalanche Energy, a VC-backed start-up, is focusing on a novel fusion configuration known as the Orbitron. The Orbitron uses a voltage difference of hundreds of kilovolts to confine the fusion fuels, while co-confining electrons using a weak magnetic field. Unlike conventional power plant-sized fusion reactors, Avalanche Energy is developing a device the size of a lunch pail that allows for rapid testing, low investment, and modularity. Its potential applications are vast, from powering electric vehicles and spacecrafts to providing electricity to remote areas around the world. Additionally, a multi-kW power pack of this size can be used as a distributed generation unit in microgrids, eliminating the uncertainty of renewables and the emissions of fossil fuel-based generators.

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Electrical Engineering from Virginia Tech in 2022 and his B.Sc. in Electrical Engineering from the Sharif University of Technology in 2018. Moein has published over 30 peer-reviewed articles and contributed to more than 10 conferences. His research interests include high-voltage engineering, dielectrics, charged particles simulation, multiphysics modeling, and power transmission designs. He has received several awards, including the best paper award in the 2020 IEEE Power and Energy Society General Meeting (PES-GM) and the 2021 Paul E. Torgersen Graduate Student Research Excellence Award. Additionally, he serves as the North America representative of IEEE Dielectric and Electrical Insulation Society Young Professionals and is a member of several organizations, including IEEE Task

Force on Frequency Domain Studies, IEEE Dielectric and Electrical Insulation Society, IEEE Power and Energy Society, and American Institute of Aeronautics and Astronautics. [Register-IEEE.com](https://www.ieee.org/conferences/expos/register)

