

SUCCESS OF GREEN HYDROGEN HINGES ON THE ADOPTION OF ADVANCED POWER ELECTRONICS

Growing Importance of Electrolysis

As hydrogen becomes increasingly vital in combating climate change, the demand for hydrogen production through electrolysis is expected to rise significantly. This growing demand will place substantial additional loads on power grids.

Challenges in Grid Connection

Large-scale deployments of electrolysis plants, pose significant challenges to power grids, including issues like harmonic distortion, reactive power demand, and voltage and frequency stability.

Solutions Through Power Electronics

Modern power electronics allow electrolyzer plants to provide valuable grid services, such as reactive power compensation, voltage and frequency regulation, and fault ride-through capabilities, which enhance grid stability. This is particularly crucial as more large-scale electrolysis plants are connected to power grids.



Hydrogen Demand

According to the IEA, global hydrogen demand is currently around 94 million tons (Mt) per year, of which only around 0.04% is currently green. Deloitte’s 2023 Green Hydrogen Outlook estimates a green hydrogen market of 172 Mt from 2030 onwards for ‘going green’ and the market is expected to increase to 430 Mt per year by 2050.

In order to be able to meet this demand, thousands of GW of renewable energies must be added, which, in addition to the new electrical loads, i.e. the electrolyzers, will have a considerable impact on the electricity grid.

Future Outlook

As the scale of electrolysis plants increases, the choice of power electronics will become a critical factor. Advanced systems that incorporate grid supporting features like e.g. flexible overcurrent capabilities will be essential for maintaining grid stability and enabling efficient hydrogen production.

REACH OUT TO US TODAY!

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