

Keynote speaker

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Title

Power Electronics Contribution to Achieving Carbon-Neutral Society

Abstract

The United Arab Emirates (UAE) hosted COP28 from the end of November 2023. There, the UAE, the US, the EU and other countries supported targets for preventing global warming, such as tripling global renewable power generation and doubling energy efficiency improvements by 2030. The targets highlight the power electronics as the essential key technology for achieving Carbon-Neutrality. In addition to these targets, to reach the goal, a revolutionary transition to clean energy is necessary by promoting electrification and Green Hydrogen application.

TMEIC continues to develop power electronics technology with the concept of “PEiE: Power Electronics in Everything.” This presentation introduces Power Electronics solutions in the megawatt rang for industries striving Carbon-Neutrality.

The first topic covers the high-capacity Power Electronics technology to increase Renewable Energy. In the future, the Renewable Energy will dominate the electrical power networks in place of fossil-fueled generators, where Power Electronics technology will provide the grid-forming functions to Renewable Energy. Power Electronics also contributes to power transmission from remote Renewable Energy.

The second topic focuses on the Green Hydrogen. In heavy industries, some sectors rely on fossil fuels and are said hard to electrify. For such sectors, switching to clean fuels including Green Hydrogen can be a good solution. Mass-production of Green Hydrogen requires high-capacity Power Electronics technology, that harmonizes with the future power networks.

The third topic addresses the power supply to the digital networks for information and communication. In the future, the digital networks will dynamically manage the energy networks operation. It is important to remember that the digital networks need the electric power. The Power Electronics technology provides reliable and high-efficiency power supply solutions.

The final topics introduces the Power Electronics applications in the tens of megawatt range to electrify large-scale processes. Additionally, the high-capacity Power Electronics systems improve energy efficiency by optimally managing various megawatt -rated processes.