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ECPE Position Statement

Role and Importance of Power Electronics including the Power Semiconductors for the „Net-Zero Industry Act“

Power electronics is dealing with the application of electronics to the control and conversion of electric power, and therewith, is a key technology for increased energy efficiency along the full chain from generation, transmission & distribution up to the use of electric energy. Furthermore, it is an enabler for the grid integration of renewable energy sources, e.g., photovoltaics (PV) and wind power. E-mobility is boosting power electronics as it is a key technology on the vehicle itself as well as on the grid side when it should be charged. Power electronics can significantly contribute to the key issues of improved energy efficiency, reduced consumption of materials, and sustainable energy supply based on renewables.

The sustainable energy supply covers the grid integration of renewable energies, the low-loss power transmission, e.g., with High Voltage Direct Current (HVDC) lines and the power distribution, including local grids with bidirectional flow of power as well as integration of energy storage into the grid. Grid control and global stability with smart inverters, integration of energy storage, reduction of harmonic distortions, and improved power quality measures are important for a sustainable and renewable energy supply.

And the power semiconductor device is the key driver and enabler in power electronics systems.

ECPE would like to stress that important contributions to the „Net-Zero Industry Act“ (NZIA) can be expected from power electronics. This is why the power electronics and power semiconductor perspective needs to be carefully considered in the NZIA process.

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The present status in the NZIA legislative process, that power electronics and power semiconductors are not explicitly listed as key components of net-zero technologies is not appropriate regarding their key and enabling role. Accordingly, ECPE calls on the EU Institutions and the Member States to recognize the indispensable role of power electronics and power semiconductors in NZIA.

Yours sincerely,



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About ECPE

ECPE European Center for Power Electronics e.V. headquartered in Nuremberg, Germany is an industry-driven Research Network in Europe with more than 220 member organizations. The Network comprises industrial members covering the full value chain of power electronics from the materials and components up to the systems and applications, as well as leading European university and research institutes. The main goal of ECPE is to strengthen the cooperation between Power Electronics industry and academia on a European level. ECPE is driving precompetitive joint research and develops research & technology roadmaps for a strategic research agenda with future research directions according to the demands of European power electronics industry. Furthermore, expert workshops and tutorials for advanced training are organized.

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Further References:

- ECPE Position Paper 'The All-Electric Society' (2022), [Strategy Papers \(ecpe.org\)](#)
- ECPE Position Paper 'What Drives Power Electronics in the New Decade - Global Megatrends in Society and their Mutual Impact with Power Electronics' (2020), [Strategy Papers \(ecpe.org\)](#)