

Topic 2: High power electronics innovation

Dr. Peter K. Steimer, general manager of the R&D department for drives & power electronics, ABB Switzerland.



Dr. Peter K. Steimer received his MSc in 1981 and his PhD in 1991 from the Swiss Federal Institute of Technology in Zurich. From 1990 till 1996 he has been the general manager of the R&D department for drives & power electronics. From 1994 till 1997 he has been responsible for ABB's high impact program focused on the development of the new IGCT power semiconductors technology. In 1998/99 he served as an adjunct professor at the University of Wisconsin in Madison. From 1999 onwards he has been responsible for the technology and innovation management of ABB's business unit for medium voltage drives and power electronics systems. In 2002 he successfully graduated in the program "Mastering technology enterprise" of IMD, a management school for executive education. Since 2013 Dr. Peter K. Steimer is serving as Vice President of Innovation for ABB's newly established global ABB Business Unit Power Conversion covering Renewables (wind, solar), Power protection, Power control, Energy storage, Transportation and Electric Vehicle charging markets. His research interests are with high power semiconductors, multi-level topologies and new applications. He is the inventor or co-inventor of more than 50 patents and has authored or co-authored more than 90 technical papers. He is an IEEE fellow and an ABB Corporate Executive Engineer.

Abstract

Power electronics innovation supports the energy efficiency from primary fuel to the end user and simplifies the integration of renewables. Energy efficiency is key to reduce fossil fuel based emissions. The dynamics of renewable power drives the changes in our electrical energy systems. Power electronics technology itself is driven by continuous innovation of conventional silicon devices, new wide band-gap devices, power electronics topologies and digital control. Efficient power conversion for renewables integration and energy efficiency by use of variable speed drives for pump and fans remain key applications. New power electronics applications emerge in the field of more DC in the electrical energy transmission (HVDC) and distribution infrastructure (datacenters, buildings), energy storage from residential to utility and more electric transportation from scooter to car and trains.