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Proposed title : Power Electronics – key technology for renewable energy systems

The global electrical energy consumption is still rising and there is a steady demand to increase the power capacity. It is expected that it has to be doubled within 20 years. The production, distribution and use of the energy should be as technological efficient as possible and incentives to save energy at the end-user should also be set up. Two major technologies will play important roles to solve the future problems. One is to change the electrical power production sources from the conventional, fossil (and short term) based energy sources to renewable energy resources. An other is to use high efficient power electronics in power generation, power transmission/distribution and end-user application. This presentation will discuss some of the most emerging renewable energy sources, wind energy and photovoltaics, which by means of power electronics are changing character from being a minor energy source to be acting as a major power source in the energy system. Issues like technology development, implementation, power converter technologies, control of the systems, synchronization, anti-islanding, grid codes, system integration and future trends will be addressed in the presentation.