

# Now is the Time for Strategic Thinking and Action at European Level

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We are experiencing changing times from the carbon era to the age of solar power, and from an energy consuming society to an energy efficiency society.

The European Union's ambitious climate goals for the reduction of energy consumption and CO2 emissions cannot be achieved without the extensive use of power electronics. After all, power electronics enables:

- the efficient feeding-in of wind and solar power to the grid,
- the stabilisation of the power grids while the share of fluctuating renewable energies is increasing,
- highly efficient variable speed motor drives,
- energy efficient and low emission mobility with electric and hybrid vehicles,
- energy-saving lighting technology and
- the efficient energy recovery.

Power electronics is key to energy efficiency and power electronics is an enabler for the increased use of renewable energies. The power electronics community is aware of this, but what about the world outside our community: politicians, stakeholders, decision makers, officials in Brussels and the management of the big industry players? Yes, the situation has improved in the last years. We started the European Power Electronics Research Network ECPE seven years ago with the mission statement to create awareness. I remember, for example, my first visit in the German research ministry. We had to explain that power electronics is not defined by MegaWatts but by the basic functionality to convert electrical energy according to the needs of the load in the most efficient way by the use of power semiconductors, and to control the flow of electrical energy. They listened politely but when we asked for a research funding programme in our area we received the feedback that they are not interested in technology topics. We should come back when we have a vision on the future of power electronics.

A lot has happened in the meantime, initiatives started by the Power Electronics Network on the one hand, but also megatrends in society moving power electronics more into the focus. ECPE started the dialogue with the European Commission on energy efficiency - the role of power electronics with a well-recognised Brussels workshop summarised in a position paper. We launched the ECPE initiative on power electronics research roadmaps and the European E4U Project on 'Electronics Enabling Efficient Energy Usage' in the ECs 7th

Framework Programme. We are working on our power electronics vision of a more electric world where sustainable electrical energy forms the basis of the energy supply.

For the megatrends in society I have to mention e-mobility where power electronics is a key technology on the vehicle side as well as on the grid side. However, public interest is focussing on energy storage technology only. Another example is the smart grid with the key challenge to create an electricity infrastructure based on renewables where power electronics is vital for the energy feed-in to the grid as well as for the efficient grid operation including low-loss energy transmission. However, the European and national research programmes solely address the role of information and communication technologies (ICT) in the smart grids.

There are also positive milestones to be mentioned. Last year, the German Research Ministry (BMBF) started a programme on power electronics to improve energy efficiency addressing exactly the topics where power electronics can contribute.

But there is still a long way to go on our way towards a common vision. Therefore, ECPE European Center for Power Electronics has initiated a European Technology and Innovation Platform 'Electronics for Energy Efficiency and Sustainability (EEESy)' to demonstrate the potential to improve energy efficiency by using innovative power electronics and to identify future research needs. This is not a misprint, we call it electronics. Power electronics still does not sell! To be clear we add a subtitle 'the strategic research initiative for efficient electric power conversion'. Today, we have 36 official technology platforms registered in Brussels e.g. for smart system integration, smart grids, photovoltaics and wind energy. However, as a cross-functional technology power electronics is not adequately represented in these existing platforms. Based on the results of the European E4U Project ([www.E4Efficiency.eu](http://www.E4Efficiency.eu)) and the ECPE Roadmap Programme, the Technology Platform will set up a Strategic Research Agenda for Europe, identifying future research needs in power electronics in its key applications. In the next step, the impact of future innovations on efficiency and sustainability will be deduced and quantified.

To achieve awareness and acceptance of power electronics as a key technology to solve energy-related challenges, and to find our place in the European research funding system, a clear positioning of power electronics as a key enabler within energy and ICT fields and programmes is necessary.

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