

Power Electronics, Pending Subject in R & D Programmes



J. Uceda

Full Professor in Electronics at the Universidad Politécnica de Madrid (Spain)
Member of the EPE International Steering Committee
Senior Member of IEEE
Vice-President Technical Activities of the IEEE Industrial Electronics Society
AdCom Member of the IEEE Power Electronics Society and Technical Program Chairman of the past PESC'92

Financial resources for research and development have multiple origins. In some cases R & D programmes are funded by the own resources of companies and institutions, but in many other cases they are partly supported by official national or international programmes. Under national programmes there are many different approaches, different priorities and different R & D structures, consequence of the different levels of development and the logical differences between scientific and industrial structures of European countries. Amongst this diversity Power Electronics appears in the priority lists in some cases. But lately, international programmes are becoming more and more important in the scientific community. Cooperation is the key word to achieve more ambitious objectives and this cooperation is stressed by the world competition.

There are many examples of international R & D programmes, but according to financial resources, those launched by European Community (EC) are the clearest reference. Examples are ESPRIT, RACE, DRIVE, DELTA, AIM, BRITE/EURAM, BIOTECH, etc..., where ESPRIT (European Strategic Programme for Research and Development in Information Technology) is the paradigm, spending more than 1.5 billions ECU in the 1991 – 1994 period. Other European institutions like European Space Agency (ESA) and CERN launch research programmes in the European context with certain impact in the Power Electronics Community but oriented to their particular needs.

EC programmes are a real European approach, because not only EC member states can participate, but also EFTA countries, and lately the participation of Eastern European countries is under consideration for the next future. If we analyse these programmes, we can easily conclude that Power Electronics is the pending subject. There are no EC programmes where Power Electronics plays a key role; marginally we could find some projects where Power Electronics contribution is significant, like those related to Smart Power technology.

On the other hand, in many areas of Power Electronics, Europe is playing a leading role in the world market, and big investments are required to guarantee this position in the global competition. All these aspects were well explained by F. D. Althoff in his paper "Power Electronics: the Silent Revolution, its Technical Importance and Economical Impact", published in the first issue of this Journal (July 1991).

Consequently with the importance of the Power Electronics in terms of the market and social impact and the leading position in the world context, a clear unbalance shows up between the economical and technological impact and the resources allocated in the international programmes.

In summary, I do believe that a common and coordinated activity must be launched to show our community the role and benefits of the application of Power Electronics, to convince our authorities about the importance of Power Electronics and the necessity to introduce this key technology in the European R & D programmes.