Principles of power

A European power design initiative is worth investing in and the UK must not miss out, writes David Manners.

Pan-European collaborative R&D has been such a success over the last two decades that a new collaboration in power electronics is likely to be successful in its aim of reversing Europe's apparent shortfall in power design.

When, 19 years ago, Philips and Siemens got together for the first big collaboration in semiconductors, Europe was four or five years behind the Americans and Japanese. Now it has three companies in the world top ten.

History could repeat itself. "In the last seven years we have been losing ground in high volume systems because the number of engineers in power electronics is diminishing - power engineering departments in universities are shutting down because there are not enough students. We have to motivate youngsters to go in this direction," says Dr Leo Lorenz chairman of the initiative, which is called "Engineering Centre for Power Electronics" (ECPE). He is also managing director of concept engineering power semiconductors in the automotive and industrial business group at Infineon Technologies.

Eight European companies have founded the ECPE: Conti Temic, Epcos, Infineon Technologies, MNB Minebea, Semikron International, SEW-Eurodrive, Siemens AG and STMicroelectronics but the membership is open to other companies wishing to join.

ECPE will focus on power system design in automotive and industrial applications.

It will be looking at technologies for integrating power electronics onto mechanics for mechatronics products. The centre aims to develop power semiconductors, power ICs, and advanced passive components. Future systems design is also part of the agenda, and studies of how future components will fit into the future systems.

Nine competency centres staffed by research scientists doing power engineering R&D - in systems engineering, semiconductor research, and IP creation - will be established in various different countries. "We're recruiting 20 to 25 scientists this year and will have up to 100," says Lorenz. A lean headquarters staff - consisting of four to eight people - will be established in Nuremberg.

Apart from the decline in power electronics competence in Europe, there are three other reasons why Europe needs to invest in the technology: first because it is ubiquitous in all electronics systems - and is the fastest growing product segment in the semiconductor industry; secondly, because power management is the essential technology for energy-saving - a big concern of political parties in Europe; third, Lorenz reckons the ECPE will reverse the move to re-locating factories to China.

"There's a new era of system integration requiring automated factories which can be anywhere," says Lorenz. "we think that, within ten years, we can turn round this trend to locate factories in China."

For all these reasons, European national governments, local governments and the European Commission are expected to contribute to the ECPE's budget in addition to annual fees from the industrial participants of up to €50,000. "We've just opened discussions with the EU authorities," says Lorenz.

However, the Government's mean-spirited attitude to pan-European R&D programmes like MEDEA, make participation by UK companies uncertain - though a competency centre is planned for the UK. Hopefully, we will not miss out again.

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