

PEIG INDUSTRY LED RESEARCH PROGRAMME

SOME PERSPECTIVES FROM KEY PEOPLE INVOLVED IN THE PROGRAMME

“Enterprise Ireland is focused on accelerating the development of world-class Irish companies. We are confident that this industry led programme will result in break-through products and processes leading to greater export sales for the companies involved. From the research organisations, we look forward to increased levels of new start ups and licences.”

Feargal Ó’ Móráin, Executive Director, Enterprise Ireland

“This industry led research programme (ILRP) brings together industrial and academic collaborators to work on projects that are both academically challenging and also potentially of great benefit to power electronics companies in Ireland. Their success will not only be judged on the outcome of the individual projects themselves, but more importantly by the links and mutual understanding they forge between industry and academia, and in creating a new generation of technology leaders for the industry.”

George Young, (Chairman of the Industry Steering Group), CEO Commergy Ltd

“The Power Electronics Industry Group (PEIG) is delighted with this initiative. Undoubtedly this will enhance the competitiveness of the power electronics companies based here and enable them forge stronger links with the research individuals and teams at the various universities and research institutes. It will also make Ireland a more attractive location for companies considering locating a power electronics R&D unit.”

Gary Duffy, (Chairman Power Electronics Industry Group), CEO Excelsys Technologies Ltd.

“The PEIG ILRP is a pioneering opportunity for researchers to work collaboratively with industry. With over a year of progress, it has already improved the mutual understanding between the researchers and industry members and has greatly enhanced the quality and strategic relevance of the research being undertaken. I am excited with the progress made already in this ILRP, and look forward to achieving both commercial success and improved future collaboration.”

Dr Cian Ó’ Mathúna (Research Nominee on the Industry Steering Group), Tyndall National Institute

“The PEIG ILRP was the first of the ILRPs and has been effective in developing the concept of the Industry Led Research Agenda. Early in 2007 we were delighted to see the first research oriented output - licensing of some technology in one of the strands to an indigenous company. I welcome the enhanced interaction between people in industry and researchers around the country. The popularity of the showcase events provides evidence of the ongoing success of the programme, and I look forward to further commercial activity from it.”

Jim Lawler, Director Industrial Technologies Commercialisation, Enterprise Ireland

So what is the PEIG Industry Led Research Programme

Enterprise Ireland (EI) and the Power Electronics Industry Group (PEIG) have worked in partnership to develop a programme to support and encourage further power electronics research in Irish Universities. The overall aim of the programme is to develop state-of-the-art technologies to accelerate the rate of innovation in power electronics companies in Ireland. The programme support and advances the development of strategic, innovative Research and Development in Irish companies in line with the Enterprise Strategy Group Report 2004.

Specific goals include:

- Perform R&D projects specified and agreed by PEIG members.
- Increase awareness of industry R&D needs in third level institutions.
- Provide a platform for industry to collaborate effectively with researchers.

- Promote industry-industry interaction and R&D opportunity.
- Train researchers in industry-relevant technical competencies.
- Support the development of R&D activity within companies.

Through a consultative process, the following research strands were identified and prioritised for work within this Industry Led Research Programme

1. Micro-fabricated Magnetics: the aim of this project is to develop inductors that can be incorporated effectively within integrated circuits. This work is being undertaken in Tyndall, with some collaboration from Cork Institute of Technology.

2. High Power Low Loss Magnetics: the aims of this project are to develop improvements in the current rating of small inductors, by making improvements in the core materials and in the winding structures. This work is being led by researchers in University College Galway, with collaboration from staff in Tyndall.

3. Digital Power Control: the aims of this project are to develop advanced control algorithms and circuit architectures of digital controllers used in power conversion circuits. The work is being done in the University of Limerick.

4. High Frequency Driver: the aim of this project is to increase the effective frequency at which power switching can effectively take place. This has substantial benefits in terms of circuit miniaturisation. The work is being done by researchers in University College Cork, with collaboration from Tyndall.

5. Power Packaging Platforms: the aims of this project are to assess novel new approaches for packaging power conversion circuits. Two are being focussed on; “chip in laminate” and “interconnect build-up layer”. The work is taking place in Tyndall, with support from researchers in University College Cork and the Cork Institute of Technology.

6. Thermal Cooling: the aim of this project is to develop a practical liquid cooling system. The work is being undertaken in the Stokes Institute in the University of Limerick.

7. Nano-scale Thermal Interface Material; the aim of this project is to apply advancements in nanotechnology to develop improvements in thermal interface materials that are widely used in power conversion circuits. The work is being taking place in Tyndall with collaboration from the Stokes Institute.

As the research programme develops, it is anticipated that other research projects will be added to the programme.

Enterprise Ireland has appointed an industry advisory board, chaired by George Young, CEO of Commergy, to advise and steer the programme. The board is staffed by leading scientists and business managers from Ireland including Excelsys, Convertec and Powervation. An international perspective is assured with representatives from Intel, Philips and NXP. Enterprise Ireland, IDA and a delegate from the researchers involved are observers on the board.

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