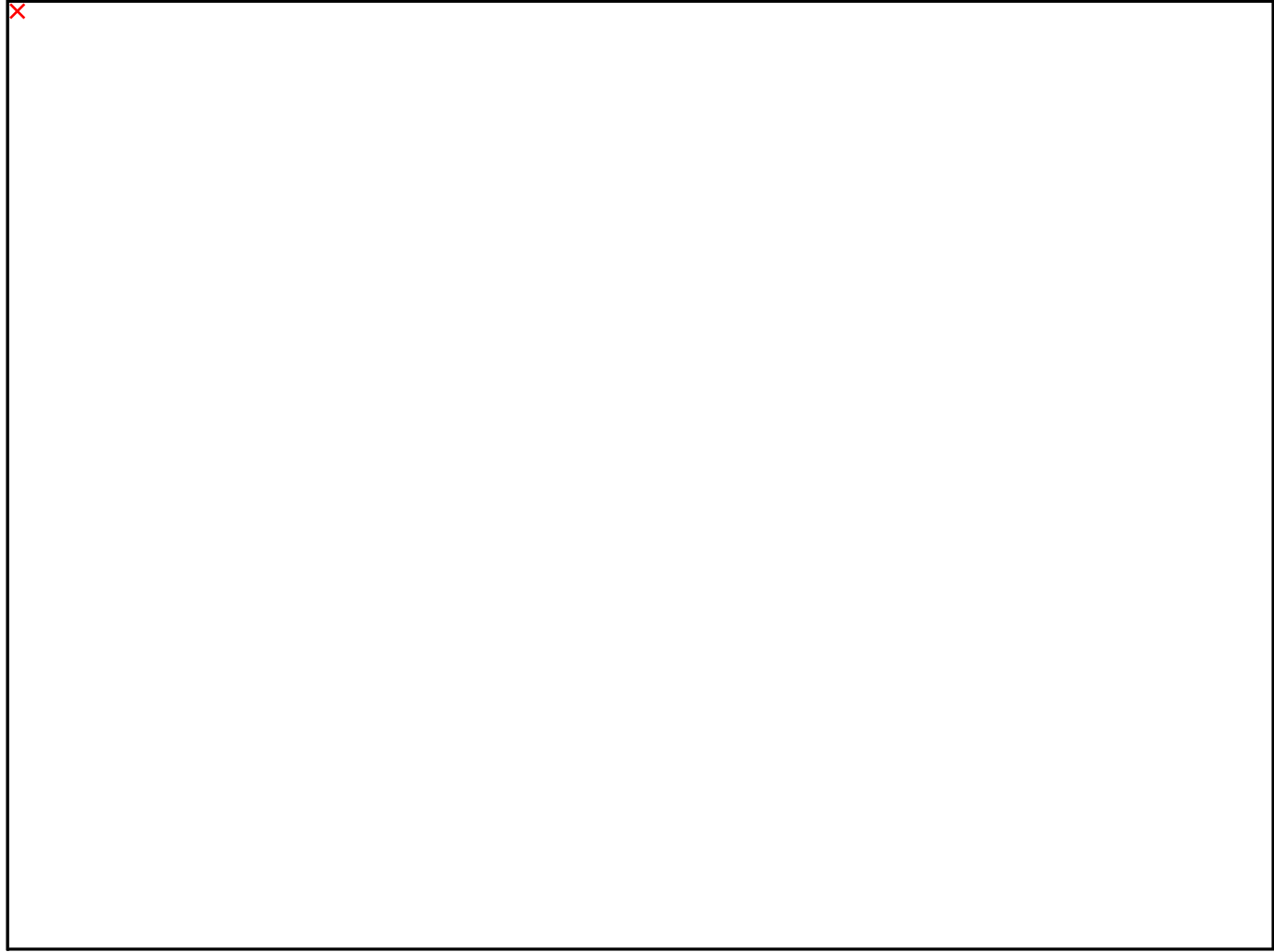


Tyndall at world’s leading Applied Power Electronics Conference, APEC 2017

Tyndall's Integrated Magnetics and ICT for Energy Efficiency Groups had a high profile at the recent IEEE Applied Power Electronics Conference and Exhibition (APEC 2017) held in Tampa Florida. This annual event, with a near-record attendance of 5,000 people, addressed a broad range of topics in the design, characterisation, manufacture, application and marketing of all kinds of power electronics components, circuits and systems.

Tyndall was represented at the conference with five technical presentations, organised an industry workshop, and chaired an industry session as well as attendance at key administration and technical meetings of both the PSMA (Power Source Manufacturer Association) and the IEEE Power Electronics Society (PELS).

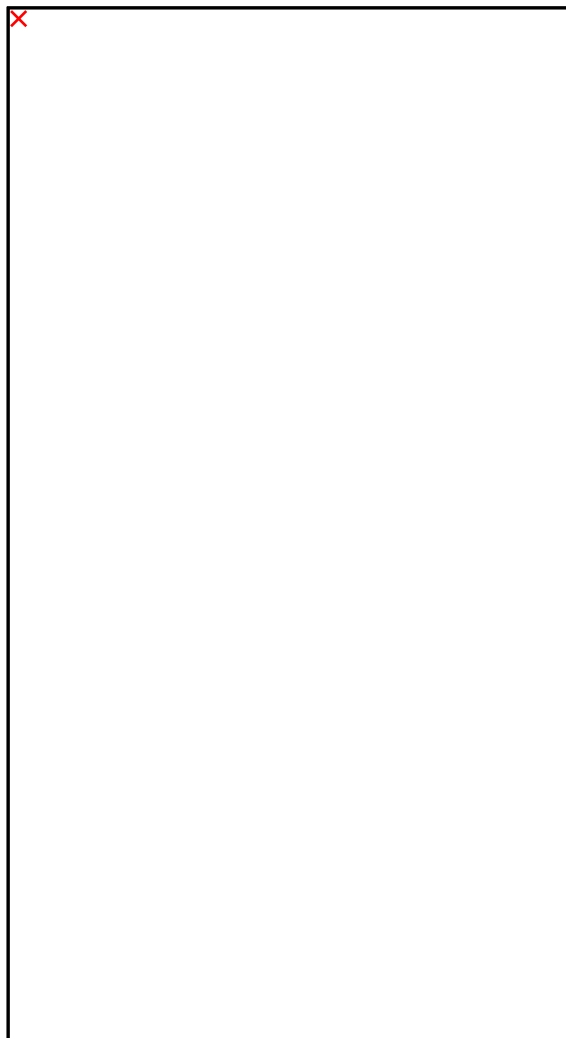
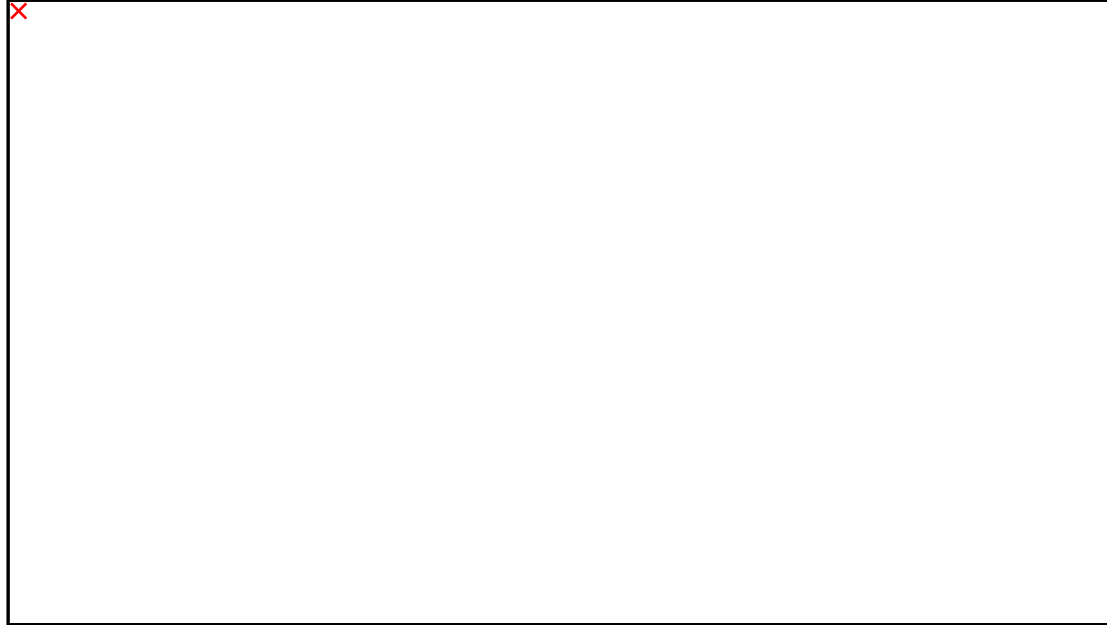


O'Mathuna - Head of Strategic Programs, Hugh Smiddy – Head of Business Development, Willie Lawton Project Manager Strategic Programs, Zoran Pavlovic – Post Doctoral Researcher, Paul McCloskey Head of Integrated Magnetics Group, Seamus O'Driscoll Principal Investigator

Below is a summary of sessions we took part in:

- Mike Hayes participated in the PSMA Annual Forum in his role as a member of the Board of Directors and reported on his activities with the Energy Harvesting technical committee which he resurrected during the past year.
- Cian O'Mathuna participated in the IEEE PELS Ad-Com meeting as the PSMA/PELS liaison with responsibility for the jointly organised PwrSoC Workshop.
- 160 people attended the pre-conference PSMA & IEEE PELS High Frequency Magnetics Workshop at which Zoran Pavlovic presented on large signal characterisation of magnetics on silicon components up to 120MHz.
- Paul McCloskey presented on Thin Amorphous Core Materials for Power Applications at the Conference Magnetics technical session attended by more than 200 people.
- Mike Hayes outlined his perspective on the challenges and considerations for 3D packaging of self-powered IoT devices in the 3D Packaging industry session.
- Mike Hayes, in his role as Chair of the PSMA Energy Harvesting Technical Committee, organised an Energy Harvesting industry session. Seamus O'Driscoll presented in this session on his research in Ultra-Low Power Energy Harvesting and Power Management IC (PMIC) Design. The session also included a very successful Interactive Energy Harvesting Demonstration from the attending speakers.
- Cristina Fernandez Herrero, a visiting researcher to Tyndall during summer 2016 from Universidad Carlos III in Madrid presented on the Integrated Magnetics team's progress in High Frequency, Single/Dual Phase, Large AC/DC Signal Power Characterization of Two Phase On-Silicon Coupled Inductors.
- As part of the industry exhibition, the Business Development and Program Management team engaged with current and prospective customers for Tyndall's technology platforms for both integrated magnetics and energy harvesting.

Head of Strategic Programmes, Cian O'Mathuna, commented *"APEC is a unique forum to engage with the key players in industry and academia in the areas of power electronics of interest to Tyndall. The profile we have created from our participation over the last decade, has generated significant publication and marketing for our research which has recently resulted in substantial technology licensing deals with global electronics companies"*



Tyndall is a world leader in the development of very high frequency, magnetics-on-silicon for future and emerging Power Supply in Chip (PwrSoC). The Integrated Magnetics Group is now extending its research to thin film amorphous magnetic ribbons to provide miniaturised, low-loss magnetics to compete with ferrite in future GaN power converters. The ICT for Energy Efficiency Group is developing micro-energy

harvesting systems to power the smart things in the future Internet of Things. A key focus is in the design of ultra-low power management ICs (PMICs).