High Frequency Switch Mode Power Transformers

Novel High Frequency Coaxial and Planar Transformers

The use of high frequency (HF) transformers for energy conversion and storage, filtering and isolation are crucial in power conversion systems and switching mode power supplies (SMPS). Their advantage is their high efficiency, high power density, low weight and small size. These characteristics make them suitable for a variety of power electronic applications such as power supplies, UPS magnetic amplifiers, EV car battery chargers and PV solar renewable energy systems. These strengths however mean greater complexity and cost due to the challenges of increasing the power-handling capability while reducing size. Additionally, large transformers tend to be very bulky and the design options are often limited by the ability of the design to dissipate heat.

Griffith University addresses this challenge with a novel suite of HF Coaxial and Planar transformers that are significantly superior to traditional HF transformers.

The Technology

A research group lead by Professor Junwei Lu at Griffith University, have developed novel HF transformer configurations that incorporate a winding structure with a Faraday shield between the primary and secondary windings. This design minimises eddy current loss, skin and proximity effects, and reduces the leakage inductance and inter-winding coupling capacitance.
Validation studies on transformers in the power capacity range of 20-200Kw have demonstrated improved efficiencies (>98%); lower production costs (estimated to be 65% of current traditional transformers) and a significant reduction in size.

The Team

The technology was developed by the research group of Professor Junwei Lu at the School of Engineering, Griffith University (Brisbane, Queensland, Australia). Professor Lu has more than twenty years experience in mobile wireless communication systems, high performance computing and electromagnetic devices.

The Intellectual Property

Griffith University is in the process of filing provisional Australian patents, covering planar and coaxial transformer prototypes. After execution of a non-disclosure agreement, a confidential data set is available to interested parties.

The Offer

Griffith University is seeking an industrial partner in the switch mode power supply and high frequency transformer field with the capabilities for evaluation, production and marketing of the transformer prototypes. We are offering a license to potential intellectual property, know-how and materials, and access to our team for further joint R&D.

Point of Contact

Interested parties are encouraged to contact Dr Ben Simpson, Business Development Manager (Science, Engineering and Technology), Griffith Enterprise:

Tel: +61 7 373 57623
Mobile: 0411 325 138
Fax: +61 7 3735 5516
Email: ben.simpson@griffith.edu.au
Skype: ben_griffithenterprise

Building N54, 1.06G
Griffith Enterprise
Griffith University, Nathan campus
170 Kessels Road, Nathan, Qld 4111
Australia

Griffith Enterprise is the commercialisation and technology transfer office of Griffith University. We help organisations to access the specialist expertise, research capabilities, inventions and knowledge based products and services of Griffith University. Our staff have commercial experience and understand the needs of industry and government partners. We offer flexible and tailored engagement terms, and a professional approach to doing business with the University. From lawyers and designers to engineers and scientists, we have it covered.