Power Electronics Training Workshop

High Frequency in Power Electronics and Drives

Mappin Building, University of Sheffield – Thursday 10 July 2025

Highlights:

- ***High Frequency Modelling of Fast Switching Wide Bandgap Devices***
- ***Active Modelling***
- ***Gate Drives and Probing Techniques***
- ***EMI Essentials and Measurements***
- ***Opportunity for Q&A with leading power electronics and drives experts***

Registration:	
All Attendees	***£25***

Prices - £ exclude VAT, including lunch and refreshments

Register Here

The **Centre for Power Electronics** and **IMAPS-UK** are organising a full-day **Training Workshop on High Frequency in Power Electronics and Drives.**

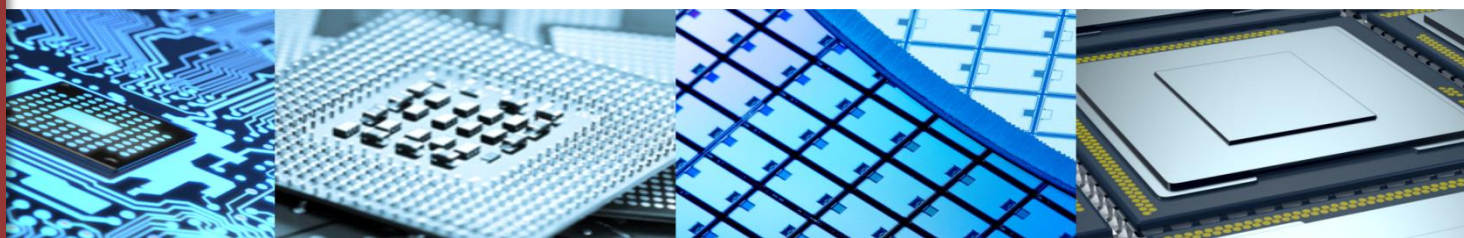
Wide bandgap (WBG) power devices are now becoming ubiquitous in power conversion applications ranging from low power DC/DC conversion to large motor drives for industrial and transportation applications. The fast switching speed (high dv/dt) of WBG devices guarantees significantly reduced losses compared with traditional Silicon-based power converters. However, this speed results in fast-fronted voltage transients with dv/dt in excess of 10-30kV/us which can cause significant challenges in many applications due to the increased risk of over-voltages in electrical cables and machines and the increased electromagnetic interference (EMI) produced.

It is therefore essential for power electronics and application engineers to have an appreciation of high frequency effects in power conversion.

To explore the causes, modelling tools, mitigation strategies and measurement methodologies high frequency this seminar will present a series of 5 tutorials on:

- High frequency modelling of machines fed by WBG converters
- Active mitigation strategies
- High frequency modelling of power devices and modules
- Gate drives and probing techniques for high speed WBG/GaN
- EMI Essentials and measurements

The workshop will address the training needs of students and researchers within Colleges and Universities and personnel within industrial companies to assist in the upskilling and reskilling of people for the design, manufacture and testing of power modules. Attendees can request a Certificate of Attendance that can be used as proof of Continuous Professional Development.



Training Workshop Agenda:

Thursday 10 July 2024

09:00 – Registration

09:30 – Welcome and Introductions

09:45 – High frequency modelling of machines fed by WBG converters – Antonio Griffo, University of Sheffield

10:45 – Active mitigation strategies - Dr Wenzhi Zhou, Coventry University

11:15 – Refreshment Break

11:30 - High frequency modelling of power devices and modules - Ke Li, University of Nottingham

12:30 – Lunch

13:15 – Gate drives and probing techniques for high speed WBG/GaN – Paul Judge, University of Edinburgh

14:15 – EMI Essentials and Measurements - Dr Min Zhang, EMC Consultant

15:15 – Q&A and Discussion

15:30 – Close and Depart

Register Here

The Venue

Mappin Building
Mappin Street
University of Sheffield
Sheffield
S1 3JD

Course Module

This course is suitable for attendees wishing to gain an overall understanding of high frequency power electronics design, manufacture and testing.

Who should attend:

- Undergraduates and Post-graduates interested in Power Electronics Research and Development
- Engineers and Technicians involved in Power Electronics Design, Manufacture, Test and Applications
- QC/Reliability Personnel and Managers wanting to gain an appreciation of the power electronics supply chain

Access to Course Presentations:

Attendance at the Course includes downloadable access to the presentation content (subject to presenter consent).

Your Workshop Tutors:

Professor Antonio Griffo, University of Sheffield: will examine PWM controlled motor drives, high frequency propagation of signals in cables and machines and Interaction of WBG converters with impact on motors

Dr Wenzhi Zhou, Coventry University: will cover mitigation strategies based on novel converter topologies and control methods

Ke Li, University of Nottingham: will cover parasitics in power modules/converters and methods to model them

Paul Judge, University of Edinburgh: will focus on gate drives for high speed power electronics (GaN/SiC)

Dr Min Zhang, EMC Consultant: will include practical demonstrations of EMI measurements

The Centre for Power Electronics (https://www.powerelectronics.ac.uk/)

The EPSRC Centre for Power Electronics provides a forum for the UK Power Electronics, Machines and Drives (PEMD) community to share research findings, facilitate knowledge transfer, industrial collaboration and train the next generation of engineers.

The Centre's work has included the following elements:
Underpinning power electronics research, project funding, support networks for postgraduates and researchers, building the power electronics community in the UK, strengthening international links and collaborations, knowledge exchange, policy influence and public engagement activities
For more information, please email: mailto:correspondence@powerelectronics.ac.uk