Sheffield's Zi-Qiang Zhu receives prestigious IEEE Tesla Award

Professor Zi-Qiang Zhu from the University of Sheffield's Department of Electronic and Electrical Engineering has received the prestigious 2021 IEEE Nikola Tesla Award for outstanding contributions to the generation and utilisation of electric power.

Prof Zi-Qiang Zhu, University of Sheffield

Recipient of 2021 IEEE Nikola Tesla Award for outstanding contributions to the generation and utilisation of electric power.

Qiang was awarded for his research which will increase the UK's supply of clean and affordable energy, recognising his contributions to the design, modelling, control and application of AC permanent magnet machines and drives. He previously received the 2019 IEEE Industry Application Society Outstanding Achievement Award, for the application of electricity to industry.

Qiang, from the Department of Electrical and Electronic Engineering, is the Head of the Electrical Machines and Drives (EMD) Research Group, which is a recognised world leader in pioneering research on permanent magnet machines and drives. The Group's key strengths lie in its integrated fundamental and applied research on enabling technologies which are vital to future developments in electrical power engineering. Past work with Siemens Gamesa includes developing novel high reliability, high efficiency, high power density direct-drive permanent magnet generators which helped the company to achieve its goal to be the market leader in offshore wind power.

EMD has a proven track record of translating research and development into commercial successes for applications encompassing many different market sectors. An example of this is the long-standing relationship Qiang has with the Midea Group, with whom the Group developed high performance and low cost innovative permanent magnet motors and drives. Led by Professor Zhu as Director of the Research & Development Centre this combination of direct collaboration between academia and industry, including the employment of skilled alumni from EMD, helped Midea to become a leading electric motor manufacturer for consumer appliances.

The IEEE is the world's largest technical professional organisation dedicated to advancing technology for the benefit of humanity. The Nikola Tesla Award is named in honour of Nikola Tesla, a pioneer in many fields, who is most renowned for the development of the AC induction motor, and is one of the 2021 IEEE Technical Field Award Recipients and Citations.

On receiving the Award Qiang said, “It is a great honour to receive the most prestigious IEEE award in our technical field. This is a recognition of not only my personal research achievement, but also the strength of electrical engineering research at Sheffield. It confirms that the Electrical Machines and Drives Research Group is the global leader in research and development on permanent magnet machines and drives, with applications ranging from electric vehicles, more electric aircraft, fast train propulsion and domestic appliances to renewable energy.”

IEEE President Mr Toshio Fukuda said that “For nearly a century, the IEEE Awards Program has paid tribute to technical professionals whose exceptional achievements and outstanding contributions have made a lasting impact on technology, society, and the engineering profession. Each year the IEEE Awards Board recommends a select group of recipients to receive IEEE's most prestigious honours, so you can feel justifiably proud.”

Vice President of Sheffield’s Faculty of Engineering Professor Mike Hounslow agreed, saying “Since joining the University in 1988 Professor Zhu’s research has ensured that the Electrical Machines and Drives Group and the University are recognised by industry and academia as being world leading. I am very proud of the long-standing relationships Professor Zhu has nurtured between the University and industry leaders such as Siemens Gamesa and Midea, and the real impact his research has had within

industry. This highly prestigious award is well deserved.”

Prof Tim Miller congratulated Qiang, saying "The Tesla Award is a "field" award and ranks very high in IEEE and in engineering generally," adding "It's not just a question of all the hard work and commitment and originality, but also that Prof Zhu has widely projected a positive, progressive approach, and he has shared his work generously and thoroughly through his publications.

"This will reflect extremely well on Sheffield University and Prof Zhu's lab and his colleagues, many of whom have made substantial contributions in their own right, and will be well known to the UK Magnetics Society. The outcome is rich in terms of graduates, research, support of industrial companies, and international reputation. I'm sure the university will be proud and pleased, and the same goes for the whole of Britain and Europe, wherever these things matter.

"One often thinks of the international nature of engineering, especially in terms of its effect in bringing people together in cooperation and intellectual stimulus. Prof Zhu is prominent in these aspects. With all the tensions the world is facing, it means something important and positive to see his name on this list of Tesla Award winners. If only more recognition were given to these unifying themes."

Mr Jeremy Tompkins, Chair of the UK Magnetics Society, added his congratulations, saying "the Society looks forward to our next visit to Sheffield University, to see the inspiring research and development the staff and students at Sheffield have continually developed over the years, that have kept you at the forefront of research into the optimisation and enhancement of many fields of magnetics."

Qiang is the fourth recipient in the UK, including:

- 1986 Prof Eric R Laithwaite
- 2001 Prof Steve Williamson
- 2008 Prof Tim J E Miller

In a final comment, Tim noted that, "On a local level this is the first time the award has gone to Yorkshire! I believe the other three British recipients were all from Lancashire!"

About the UK Magnetics Society

People involved with the UK Magnetics Society believe that magnetism in all its forms is an amazing force, and that by understanding and harnessing it people can deliver amazing things. We are called the UK Magnetics Society, but only because we started there. There are no limits to members, delegates, events or content – as our resources allow, we always have and always will engage worldwide, supporting magnetics professionals in all fields or countries, and in industry, government and academia.

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