

Inductive power transfer: Powering our future

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Abstract. The ability to provide power without wires was imagined over a century ago, but assumed commercially impractical and impossible to realise. However for more than two decades the University of Auckland has been at the forefront of developing and commercialising this technology alongside its industrial partners. This research has proven that significant wireless power can be transferred over relatively large air-gaps efficiently and robustly. Early solutions were applied in industrial applications to power moving vehicles in clean room systems, industrial plants, and in theme parks, but more recently this research has helped develop technology that has the ability to impact us directly at home. The seminar will describe some of the early motivations behind this research, and introduce some of the solutions which have been developed by the team of researchers at Auckland over two decades, many of which have found their way into the market. It will also describe how the technology has recently been re-developed to enable battery charging of electric vehicles without the need to plug in, and alongside this how it has the potential to change the way we drive in the future.

1. About The Speaker

Prof Grant A. Covic (Senior Member IEEE) received his BE (Hons), and PhD degrees in Electrical and Electronic Engineering from The University of Auckland (UoA), New Zealand in 1986 and 1993 respectively. He was appointed as a full time Lecturer in 1992, a Senior lecturer in 2000, an Associate Professor in 2007 and to Professor in 2013 within the Electrical and Computer Engineering Department at the UoA, New Zealand. In 2010 he co-founded (with Prof. John Boys) a new global start-up company "HaloIPT" focusing on electric vehicle (EV) wireless charging infrastructure, which was sold in late 2011. Presently he heads power electronics research at the UoA and co-leads the interoperability sub-team within the SAE J2954 wireless charging standard for EVs.

Today his research and consulting interests include power electronics, electric vehicle battery charging and inductive (contact-less) power transfer (IPT) from which he has published more than 100 refereed papers in international journals and conferences. He also holds a number of US patents with many more pending, from which licenses in specialized application areas of IPT have been granted around the world.

