

**Title: Electric Vehicle Technology, present and future**

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**Abstract:**

The electric vehicle is now a hot topic globally. Not only is the emission low, but it also provides safety, high efficiency and high research content for scientists and manufacturers. The development in power trains, energy storage and fuel has attracted numerous professors and automotive manufacturers to switch to this new area of R&D. It is expected that in the coming 20 years, over 70% of the vehicles will be electric. The associated power distribution, energy management, vehicle parts and charging system will be in demand.

The electric vehicle is not only the vehicle itself; the associated development in smart driving, vehicle-to-vehicle(v2V) and V2X are also important development in the next few decades. The engineering, materials, management, and manpower involved will be enormous.

The talk will discuss present and future challenges of power conversion, carbon footprint, engineering behavior and the research work. The high power and advanced technology of electric vehicles and the associated power electronics development will be described.



**Prof Eric Cheng** obtained his BSc and PhD degrees both from the University of Bath in 1987 and 1990 respectively. Before he joined the Hong Kong Polytechnic University in 1997, he was with Lucas Aerospace, United Kingdom as a Principal Engineer and led a number of power electronics projects.

He is the electrical designer for the Hong Kong 1<sup>st</sup> commercial electric vehicle in Hong Kong and is also named the father of electric vehicles in Hong Kong. He is also the designer of the 1st charging network in Hong Kong. He received numerous awards related to electrical engineering, energy and automotive. He has published over 500 papers and 7 books. He has over 100 interviews by the media on his research

and development. He is now the professor and director of the Power Electronics Research Centre of the university. His research interests are all aspects of power electronics, Power Quality, Renewable Energy, Motor Drives, Energy Storage, Energy Saving, Power Distribution, EMI, High-Speed Rail, Electric Vessel, Electric vehicles and Advanced Automotive components. He is the recipient of the international award in Seoul International Invention Fair 2015 Gold prize for his contribution in super-capacitor to electric vehicles, 2016 iCAN Gold Medal for his contribution to active suspension, and Gold Award of Hong Kong Innovation and Technology in 2017 and Geneva's Invention Expo Silver Award for his contribution in the antilock braking system and top 20 Tera Award in 2021. Prof. Cheng is a chartered engineer and a fellow of IEEE and IET.