

## DR INNOCENT EWEAN DAVIDSON

### Professor & Chair, Department: Electrical Power Engineering

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**Dr Innocent Ewean Davidson** is a **Full Professor and Chair**, Department of Electrical Power Engineering. He is a *Fellow*, Institute of Engineering and Technology, United Kingdom; *Fellow*, South African Institute of Electrical Engineers; *Chartered Engineer*, United Kingdom; *Senior Member*, Institute of Electrical & Electronic Engineering, USA; registered *Professional Engineer* with Engineering Council of South Africa. He received the Bachelor of Engineering with *Honours* and Master of Engineering degrees in Electrical Engineering, University of Ilorin, 1984 and 1987; Doctor of Philosophy, *PhD* in Electrical Engineering, University of Cape Town, 1998; Post-graduate Diploma in Business Management, Graduate School of Business, University of KwaZulu-Natal, 2004; Associate Certificate, Sustainable Energy Management, British Columbia Institute of Technology, BC, Canada, 2011; and Course Certificate in Artificial Intelligence, from the University of California at Berkeley, USA in 2020. He has several years of experience in engineering and technology, research and implementation, university teaching and academic leadership, industry and consulting. Prof Davidson joined Durban University of Technology in 2016 and risen to the position of Head of the Department. Under his dynamic and inspirational leadership, all academic programs in his department received full accreditation by the Engineering Council of South Africa in September 2018. His international exposure in both teaching and research are making a valuable contribution to Faculty, in terms of curriculum renewal with particular emphasis on research initiatives, collaboration and community engagement. Prof Davidson has been tasked with responsibility to setup a research centre in Faculty that should grow to a Centre of Excellence. His international and local industry and professional collaborations will be very instrumental in moving the department forward, in terms of realizing Faculty vision of excellence in producing relevant professionals who use engineering, technology and design for societal development in South Africa. From 1987-1992, he was a Lecturer at the University of Ilorin and Federal University of Technology, Akure. He was *Engineering Inspector* and *Project Manager*, Rainbow Energy Project at EASIGAS (Pty) Ltd, Cape Town (1994-1995). During the period 1994-2006, he served as a Sessional Lecturer, University of Cape Town; Lecturer, Cape Peninsula University of Technology and Vaal University of Technology; Senior Lecturer, University of Pretoria and Natal University (UKZN). He was *Visiting Professor* from 2005-2006 at Powertech Labs Inc. (Research Division of Canada's BC Hydro), Surrey BC, Canada, a world leading consortium in clean energy technologies, independent testing services, power system solutions and smart utility services. He was an *Energy Consultant* in Surrey, BC, Canada, 2007-2012, implementing energy efficiency (electricity/gas) measures under the British Columbia provincial government's mandate on *Climate Change*. He was *Associate Professor* of Electrical Engineering and *Research Coordinator*, Faculty of Engineering and Information Technology, University of Namibia from 2012-2014; and Project Engineer for the *Benguela Community-UNAM Wind-Power Project*, Luderitz, Namibia, a project funded by the European Union. From 2014 to 2016, he was *Director*, Eskom Centre of Excellence in High Voltage DC Engineering, University of KwaZulu-Natal and Coordinator, Eskom Power Plant Engineering Institute (EPPEI) program. His research interests include HVdc power transmission, grid integration of renewable energy, innovation for smart cities, power system planning and economics. Smart-Cities innovation derives from previous work in Sustainable Energy Management Program at BCIT in collaboration with BC Hydro PowerSmart Program. Smart City is the sustainable modernisation of a community and its infrastructure using technology, such as: green energy-efficient buildings, smart transportation systems (V2I), smart water and smart grids. The goal of building a smart city is to advance commerce; improve on the quality of life by using technology to improve the efficiency of services and meet residents' need without compromising the needs of future generations. Prof Davidson is the Chairperson, DUT Space Research Program Management Committee; Chair, Faculty of Engineering Research Committee (2018-2019) and recipient of several local and international research grants, including the Royal Academy of Engineering Grant, UK. Since 1994, he has consulted with industry: including Contract Research Grant #11003799 ("*Spatial Modelling of a Photovoltaic Generator for Localised Load Management*") funded by ESKOM and THRIP; Royal Academy of Engineering, UK Award for the project: "Quality Engineering Education through University-Industry Partnerships in Eastern & Southern Africa", in collaboration with University of Namibia, University of Nairobi, Addis Ababa University and Cambridge University UK. He has managed over R45million in research funds; and has developed and presented invited industry-focussed courses to the South Africa's Electricity Industry. Prof Davidson has demonstrated achievements and practical accomplishments of his strategic research which has won numerous accolades, such as: the Best Student Paper Award for the technical paper: "Intelligent Disbursement and Impact Analysis of DG on Distribution Networks to Mitigate SA Energy Shortages", at the *Clemson University Power Systems Conference*, 8-11 March 2016, Clemson, SC, USA; the Best Paper Award at the *International Conference on Renewable and Energy Research and Applications Conference*, Birmingham, UK, 20-22 Nov 2016 for the paper titled: "Harmonic Distortion of LCC-HVDC and VSC-HVDC Link in Eskom's Cahora-Bassa HVDC Scheme"; Best Paper Award at the *Clemson University Power Systems Conference*, Clemson, SC, USA; 10-13 March 2020 for the paper titled: "Modelling and Assessment of the Fault Ride-Through Capabilities of Grid Supporting Inverter-Based Microgrids"; He was a co-recipient of the Best Paper Award for the technical paper: "O. Ojo and I. E. Davidson, "PWM-VSI Inverter Assisted Stand-alone Dual Stator Winding Induction Generator", *IEEE Transactions on Industry Applications*, Vol. 36, No 6, pages 1604-1611, Nov/Dec. 2000. He has been a Guest Writer for *IEEE Power and Energy* as an internationally recognized expert on *Africa's Electric Power System: "Energizing Africa's Emerging Economy"*, *IEEE Power and Energy*, Vol. 3, No 4, July/August 2005. At DUT's Annual Research & Innovation, Prof IE Davidson was the recipient of the "*Top Impact Author Award*", Nov 2020; "*Top Faculty Researcher of the Year (Platinum Category)*", Nov 2019; "*Faculty Researcher of the Year*", Nov 2018. Prof Davidson is an internationally recognized and respected leader in his field. He was elected *IET Fellow* due to his creativity and personal responsibility for significant technological innovation and achievement in engineering. It affirms his superior responsibility, leadership and contributions to the engineering field. Prof. Davidson has graduated 8 PhD and 42 Masters students. He is the author/co-author of over 300 accredited journals, peer-reviewed conference proceedings and technical reports. He is a member: Western Canada Group of Chartered Engineers (WCGCE); the Institute of Engineering and Technology (IET Canada) British Columbia Chapter; IEEE Collabratec Communities on Smart Cities and IEEE (South Africa Chapter).