

Message from the Editorial Team

We wish everyone a refreshing and productive year. This edition reflects on the Departmental events that took place in the last four months of 2020. In starting the year on a high note and preparedness, the details of upcoming conferences and Departmental events are provided. We continue to urge everyone to take all necessary precautions in preventing the spread of COVID-19 as the South Africa experiences a second wave. Our sincere condolences to those who have lost their loved ones.



Design Project III Awards



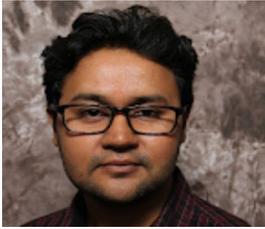
Congratulations to Miss Mathenjwa (left) and Mr. Bojraj (right) for their outstanding performance in Design project III finals. The HOD, Professor IE Davidson (left) and Subject Lecturer Mr. R Stops (right) handed over awards to the best students as this was the last official group for the phasing out of National Diploma.

The project includes the design, construction, testing and documentation of a complete project in electrical engineering. The project work introduces students to basic hand skills; select and utilize engineering equipment correctly and safely; use engineering tools to work accurately to the required specifications; design and manufacture of a small prototype; report writing; produce a safe, working and acceptable artefact.

Undergraduate project design prepares the students for a career in the variety of electrical engineering fields as well as becoming a competent practicing engineering technician that will make a meaningful contribution to the economy and national development.

Research, Teaching & Learning

Highlights



The Department congratulates Dr. Sharma on his successful NRF Y2 category rating by the NRF.

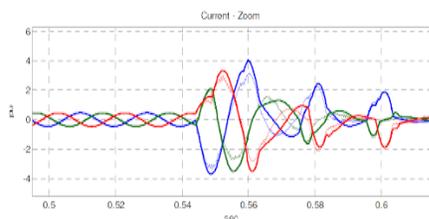
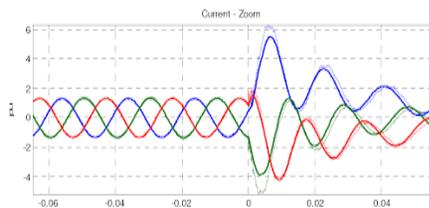


It is with great pleasure to announce the successful award of the NRF Thuthuka Grant to Dr. Musasa Kabeya (left) and Mr. Dwayne Reddy (right)



Opal-RT OP4510 Real-time HIL Simulator

- The Centre of Excellence in Smart Grids (DUT Research focussed Area), located at the Department of Electrical Power Engineering, acquired a new R1.25 million Opal-RT Simulator, devoted to Smart Micro-Grid Research & training.
- Opal-RT enables real-time simulation and performance analysis of renewable energy sources.



DigSILENT PowerFactory Training

Three postgraduate students were provided training in this leading electrical power systems engineering software analysis tool, used by Eskom and all electric utilities, to build capacity in research and equipping laboratory demonstrators to support undergrad training and design projects. Activities included:

- Selection and set up of the equipment library for line and transformer type data.
- Training on network building using standard substations with a variety of exercises on LV, MV & HV networks.
- Development of various user-defined substations by each participant. All these previous exercises culminated in adding user-defined substations to single line graphics and various interconnecting substations.

Journal Articles

- [1] **G. Sharma**, "MPC Built Frequency Regularization Studies of Multi-Area Electric Power System Base on Short Term Load Forecasting Using ANN," *International Journal of Engineering Research in Africa*, 2020, vol. 50: Trans Tech Publ., pp. 145-161, DOI: <https://doi.org/10.4028/www.scientific.net/JERA.50.145>.
- [2] **N. Kapidani, S. Bauk, and I. E. Davidson**, "Digitalization in Developing Maritime Business Environments towards Ensuring Sustainability," *Sustainability*, vol. 12, no. 21, p. 9235, 2020, DOI: <https://doi.org/10.3390/su12219235>.
- [3] Eddie Singh, **Innocent E. Davidson** and **Sindisiwe C. Malanda**, "Lightning Performance and Economic Analysis of an Overhead 88 kV Power Delivery Network with Enhanced Protective Systems", *Energies* 2020, 13(24), 6519, 10 Dec 2020. DOI: <https://doi.org/10.3390/en13246519>.

Peer-Reviewed Conference Proceedings

- [1] **B. Madonsela, I.E. Davidson, C. Mulangu**, "The Analysis of the Satellite Communication for the Electrical Substation Located in Rural Areas". Paper presented at the *5th Interdisciplinary Research and Innovation Virtual Conference 2020*, Durban, 16th September 2020.
- [2] **B. Madonsela, I.E. Davidson, C. Mulangu**, "The Analysis of the Innovative Maritime Communication and Navigation Systems". Paper presented at the *5th Interdisciplinary Research and Innovation Virtual Conference 2020*, Durban, 16th September 2020.
- [3] **J. D. Dakora, I. E. Davidson, and G. Sharma**, "Conceptual Design and Analysis of Modern Space Solar Power Satellite and Rectenna Systems". Paper presented at the *1st International Conference on Maritime Education Development (ICMED 2020)*, 23 - 24th November 2020, Durban, South Africa.
- [4] **B. Madonsela, I. E. Davidson, C. Mulangu**, "The analysis of Global Navigation Satellite Systems (GNSS) and the Numerical Estimation of Multipath Propagation". Paper presented at the *1st International Conference on Maritime Education Development (ICMED 2020)*, 23 - 24th November 2020, Durban, South Africa.

Events and Announcements	Upcoming Conferences
<p>DRC - Departmental Research Committee 08 January 2021 05 February 2021 05 March 2021</p> <p>Faculty Research Committee (FRC) 25 January 2021 22 February 2021 23 March 2021</p>	<p>29th Southern African Universities Power Engineering Conference 28-29 January 2021, North-West University, South Africa. HTTPS://WWW.SAIEE.ORG.ZA/DISPLAYCUSTOMLINK.ASPX?NAME=SAUPEC2021</p> <p>The 3rd Power & Energy Africa 2021 Date: 20 - 22 May 2021 Location: Kigali Convention Centre, Rwanda https://www.africanpowerplatform.org/resources/events/upcoming-events/1355-the-3rd-power-energy-africa-2021.html</p> <p>IEEE PES & IAS Power Africa Conference, August 25-28, 2021 <i>(All submissions received by the first deadline of 5th March 2021)</i></p>

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