



*ELECTRICAL POWER ENGINEERING*

Department of Electrical Power Engineering

Postgraduate Research Template

#	Student Name / Surname	Musawenkosi Lethumcebo Thanduxolo Zulu	Start Date	Feb 2019	Supervisor	Dr. Evans E Ojo
	Title of Project	Power Flow And Fault Analysis Of A Hybrid DC Microgrid: PV System and Wind Energy System.	Completion	2020	Co-Supervisor(s)	Mr. Akinrinde T
Program of Study (M Eng. / D Eng.)			Master of Engineering			
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<p><b>Synopsis of Research Project: (&lt; 300 words)</b></p> <p>Rural electrification has become a very important means of improving the standard of living of rural dwellers and this process can also help isolated regions gain access to electricity. The use of available renewable energy sources such as PV and wind energy is gaining popularity as solution to achieve full electrification for rural areas such as the use of microgrid. At the moment, DC microgrid can be used to connect distributed energy resources and its energy storage is considered as economical system to meet consumers demand. This is due to its benefits to its benefits such as environmental friendly, reliability and very good performance in load distribution. The power system may experience many faults when transferring power via the overhead transmission lines to the load. When these faults thus occur, it is important to detect the location and isolate the part that had experienced fault quickly without de-activating the whole microgrid. This study is aimed to design and model a hybrid DC microgrid using PV system and wind energy with a battery storage. This will involve conducting power flow and fault analysis. Unsymmetrical faults in a hybrid DC microgrid power system such as the single line to ground fault, line to line fault and double line to ground faults are investigated. The power flow and fault analysis in the proposed system will be investigated by computer programs developed in MATLAB/SIMULINK.</p>						