**Reviewer: 1**  
Comments to the Author:  
What the author have done is more like a mix of different protection schemes, there is no innovative protection principles presented in the paper. Meanwhile, two mistakes are existed in this paper:

In this paper, a microgrid is modelled in MATLAB/SIMULINK. The system is analysed to determine its various parameters such as currents, voltages, line impedances, and active and reactive powers to develop protection algorithms. The proposed protection schemes by other researchers such as symmetrical-current protection, and time-graded voltage protection techniques have also been analysed. But in the end a general protection scheme is recommended which would protect a microgrid under all fault conditions. The recommended protection scheme is reliable; it possesses selectivity and security. It is a mix of conventional protection schemes (e.g., voltage and thermal capacity protections) and non-conventional protection schemes (e.g., fault detection from the analysis of symmetrical currents). The pick-up values of for the proposed protection algorithm are also determined. Moreover, it has been ensured that all types of symmetrical and unsymmetrical faults can be identified from the voltage and current waveforms without any centralized communication device.

We believe that this comment of the reviewer is a bit harsh. This comment perhaps is something to do with the title of the paper - *Evaluation of Different Protection Schemes for a Microgrid* – from which the reviewer might have concurred that the paper just evaluates the protection schemes of different researchers. However, it is not the case as has been described in the first paragraph (the paper proposes an innovative protection scheme and analyses it).

1. When the earth-leakage or differential-current relay is used (ia+ib+ic+in=0), fault features in the faulty line and the healthy line are all the same, and then the selectivity of different relay can’t be ensured.

A differential or earth-leakage relay is used only for the detection of an earth faults. If there is no earth fault the differential current (sum of the phasor currents of all the three phases) will be equal to zero. In case of a fault this value will be non-zero as the sum of the three phase currents will not be equal to neutral current; instead it will be equal to the sum of the neutral current and the current which will complete its path through ground. The sum will become ia+ib+ic+in= Ie (earth-leakage current). This is the working principle of all the earth leakage protection devices. The fault will be sensed by all the upstream relays if it is a radial line. Upstream relays are time graded to ensure selectivity.

However, any relay downstream will not detect this fault. This problem has been discussed, in detail, in the paper. This is the reason why it is proposed that zero sequence currents must be measured to ensure the presence of an earth fault as the downstream relays will fail to detect earth leakage and selectivity will be lost.

1. The phase voltage at Bus A and Bus C in Fig. 9 exist two mistakes, because if L-G fault occurred in zone B, the faulty phase voltage magnitude at Bus A and bus C should have been equal to zero, But the Fig. 9 show that the faulty phase voltage magnitude at Bus A and bus C is very high.

If there is a fault at a distant location on a distribution feeder, the voltage at the relay location will decrease but it surely will not be equal to zero if it is a long distribution line (however, the voltage at the faulted point, with respect to ground, in case of a line-to-ground fault will be zero if the fault impedance is zero). The distribution lines in zone B are ten kilometres long (typical length of a primary distribution line in Pakistan). In case of a fault in zone B, the voltages at the points close to the fault will become zero but the voltage at system buses which are located at a large distance from the fault, will not be equal to zero. There is a 50% drop in the voltage, observed at these buses. This voltage would have had a smaller magnitude if it were a conventional power system. In a microgrid where there is an abundance of renewable energy sources which are feeding in power by voltage-controlled inverters, the drop in voltage is much less as the control device will try to maintain the voltage at the generation bus.

**Reviewer: 2**  
Comments to the Author

Authors should explain this statement "In case of a fault in the microgrid (zones A, B or C), the circuit breaker of faulty zone should open. The static switch should also open to isolate the faulty microgrid from the utility grid. This limits the flow of heavy utility grid fault currents in the microgrid, which can damage the microgrid [14]. The microgrid always moves into islanding mode if there is a fault in the microgrid, because the static switch will operate faster than any other circuit breaker in the microgrid."How this is possible? If there is a fault in feeder A -How the total Micro Grid comes to Islanding position. Only Feeder A should be isolated and remaining DG will cont. in operation.

In case of a fault in the microgrid the static switch should be opened to isolate the utility grid from the microgrid. There are two main reasons for this: 1.The utility grid can have a very large short-circuit current which can damage the microgrid if it is allowed to flow even for a short time. There are certain circuit breakers in the microgrid which are operated with some time delay in order to ensure selectivity, e.g. circuit breaker of zone B is time delayed to ensure it operates after circuit breaker of zone C. This time delay might result in the breach of the thermal capacity of the components of the microgrid, 2. Also the microgrid circuit breakers might not have the short circuit MVAs large enough to interrupt the circuits when the utility grid is feeding the fault. Once utility grid is isolated, the fault current will be only due to the PWM-based renewable sources and can be easily interrupted by the microgrid breakers. This results in the selection of smaller and more economical circuit breakers within a microgrid.

This operating scheme can be achieved by keeping the operating time of the static switch minimum. If the microgrid is in the grid-connected mode and there is a fault in it, the static switch will isolate the microgrid. The microgrid circuit breakers will be operated after some time delay which is determined by the selectivity scheme used. Once the faulty section of the microgrid is isolated by the operation of the circuit breaker of the respective zone, the rest of the microgrid is reconnected with the utility grid. This scheme has an added advantage; it keeps the operating scheme of the static switch very simple. It can be made to operate very quickly for any type of fault irrespective of the fact that the fault is in the utility grid or the microgrid. We will not require any directional protection. If there is a fault anywhere in the system, the static switch will be operated quickly.

In case of a fault in zone A, initially the static switch will open. The microgrid will move into the islanding mode. At the second stage, the breaker of zone A will be opened after which the rest of the microgrid will be resynchronized with the system.