Chapter 4

Conclusions

4.1 Conclusions, remarks and discussion

The increasing price of electricity and availability of a wide variety of distributed generators has brought about a new era of distributed generation. Distributed generation offers advantages such as reduced transmission losses, voltage and reactive power support to the grid, improved system reliability, and decreased cost of unit of energy. Although DGs have been getting a lot of attention in the recent past, the prospects of their widespread adoption is not certain.

This thesis reviews the prominent islanding detection techniques and looks at their implementation feasibility, their impact on the utility, and their probability of causing false tripping. In an attempt to overcome these drawbacks and to negative impact of the PF technique on the utility electric grid, a new hybrid technique involving both active and passive schemes is proposed and tested. In this technique only the DG that detect VU spike larger than the set threshold value will change their frequency set point. The magnitude of the VU spike seen by DG depends on the size of the DG and distance from the disturbance. This is a great advantage over PF technique, where all the DGs connected to the electric utility work together at all times to try to destabilize the electric utility frequency and voltage. Further it investigates how efficiently proposed islanding detection technique discriminates load switching and islanding.

It is therefore concluded that proposed hybrid islanding detection technique, which includes a combination of an active [30] and a passive [22] technique, has an ascendancy over the existing techniques.

4.2 Recommendation for future research

In this thesis only synchronously rotating DGs were considered. As a continuation of this work, it is proposed that DGs with electronic interface be included in the model to include both synchronous DGs and non-synchronous DGs such as fuel cells, photovoltaic power generation connected to utility grid.