

CHAPTER VI

CONCLUSION

6.1 Conclusion

The grid-connected photovoltaic system is modeled with implementation in MATLAB-SIMULINK. Some simulations in a test system have been done to see its impacts.

As the result, the presence of DG like SG or GCPV in the distribution system can improve the system reliability, power quality and environmental-friendly aspect if it is installed properly. However, it will increase the fault current contribution that can affect the protection coordination. The fault current contributions from the DG systems increase when the DG penetration level installed in the system increases. Moreover, the fault current contribution decreases if fault locations are further away from the substation. The simulation results show that the fault current is lower in the presence of GCPV systems than those in SG because GCPV is based on inverter that is set current limiter to respond, and SG is based on the characteristic of the machine. The results from the fault current analysis are used to evaluate the protection coordination devices that are installed in the system. In addition, the protection coordination, especially recloser fuse miscoordination will change their function if the DG penetration level in the system increases. Finally, the location and type of DG installation are also the factor of the impact on protection coordination.

6.2 Future Work

According to this research, the comparison of fault current levels between GCPV systems and SG is studied. It is found that the impact of SG to the system is greater than those of GCPV. So the following research should compare the GCPV systems with other renewable energy sources, like wind generator or other distributed generation based on inverter to investigate its advantage and disadvantage. Finally, it should observe and limit the DG capacity installation in the system that would not impact the protection coordination.