

Chapter VII
CONCLUSION AND RECOMMENDATION



7.1 Conclusion

The purpose of this thesis is to design and construct an automatic solar tracking system using solar cells as detectors. The requirement is to control the flat plate (solar array) to lie in a position that is perpendicular to the solar radiation all day.

The constructed system is capable of controlling the movement of the flat plate in the direction from the East to the West (-90 degrees to +90 degrees). The average error angle is within the range of ± 1 degree. The error angle is caused by the effect of gear backlash. The output response of the system is overdamped with a time constant of approximately 100 seconds.

7.2 Recommendation

The following recommendations are proposed :

1. If one wishes to design a solar tracking system with a more accuracy than that given in this design, he should design gears or other mechanical transmission devices so that the play between their mating members is as small as possible. However, it is practically impossible to eliminate backlash entirely.

2. If one wishes to design a solar tracking system with a higher torque at the moving part or a heavier load; he may select a motor with a higher speed and he must design a gear train in order to reduce the motor to a required lower speed. This change will also reduce the disturbance effect of the wind.