CHAPTER 8
CONCLUSION

8.1. CONCLUSION

In conclusion, the utilization of servo drives in welding applications facilitates the precise control necessary for producing strong and clean welds, a task that cannot be consistently achieved by human operators alone. By integrating the designed servo drive into robotic welding systems, the project enables the maintenance of a high level of precision and repeatability in the welding process. This ensures reliable and uniform weld quality, which is essential for the consistent and efficient operation of robotic welding applications.

The project aims to design a servo drive input of single-phase AC voltage into a three-phase AC output, which is essential for powering the low power servo motors used in robotic welding applications. The torque and speed response characteristics of the servo drive were fine-tuned to ensure its suitability for low-power robotic applications, where precise control of the servo motor is crucial. It also involves comparing the performance of a PI controller and a Fuzzy Logic Controller for Field Oriented Control using MATLAB/Simulink. The results demonstrated that the Fuzzy Logic Controller outperformed the PI controller, it shows the advantages of advanced control techniques in optimizing the servo drive's output speed and torque response.

8.2. FUTURE SCOPE

Servodrives are preferred for applications where precise control over speed, position, and torque is essential. These applications often require high-performance motion control, such as in robotics, CNC machining, printing, packaging, and automated assembly lines etc. The future scope of this project work is to achieve the complete hardware implementation of experimental setup Field Oriented Control of Servomotor using PI controller and Fuzzy Logic controller.