CHAPTER - 7

SUMMARY AND CONCLUSIONS

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Based on the experimentation done and results obtained through graphical analysis of Wear Volume, Wear Factor, Friction Coefficient, Micro-Hardness, Micro structure and SE micrographs and also based on the result agreement with the previous research, the better process for each condition of wear was observed and concluded:

1. TIG welding samples were showing better wear properties than Gas welding samples and Arc welding samples till the Sliding velocity of 1.256 m/s with various sliding distances and loads.
   Hence TIG welding process can be carried out for components subjected to lower wearing conditions.

2. Gas Welding samples and Arc Welding samples yielded better results at higher sliding velocities above 1.571 m/s with various sliding distances and various loads compared to TIG Welded Samples.
   Gas Welding and Arc Welding process can be carried out for components subjected to medium wearing conditions.

3. Arc Welding samples were showing better properties than Gas welding samples at higher sliding velocities above 1.571 m/s and at higher sliding distances higher than 1500 m.
   Arc welding can be carried out for components subjected to higher wearing conditions.
4. Wear mechanism in the present research is found to be a contribution of both abrasive wear and adhesive wear.

5. The present research has been carried out using commonly used welding processes using AISI 1020 Steel as base metal and deposition metal. This method can be used for low cost equipment / machinery to be used in agricultural and small scale industrial applications.

6. It was clearly established from the experimentation that due to the heat input from a different welding process, higher hardness is registered on the welded deposits compared to the base metal. It should be noted that the scholar has used the same base metal as deposit metal. It gives rise to the scope to use this procedure to find out the effect of depositing base metal as weld consumable even for different grades of steel in order to look in to the possibility of avoiding the special alloying elements. Thereby the problem of crack development due to uneven expansions and contractions happening because of hardfacing alloys of higher hardness and strength as weld consumable used on a base metal can be avoided. This leads to the increase in life of hardfaced component which is evident from the results obtained in the present research work.