CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

DF2 tool steel is supplied by manufacturers in various surface executions including hot rolled, pre-machined, fine machined and precision ground. It is a very popular material used for the making of tools, dies, gauges, and measuring tools. As the demand for more complex and intricate tooling arises, manufacturers are turning to WEDM in order to meet this demand. The challenge faced by users of WEDM is to optimize the machining parameters so as to achieve the desired machining responses in the most efficient manner. This project was taken to meet this requirement. Data from experiments carried out was analysed and the conclusions arrived at are:

a. WEDM machining parameters that give significant effect towards the machining of DF2 are as follows:

    i. For surface roughness (R_a), the machining parameters that provide significant effect are the wire feed rate (WF) and pulse duration (ON).

ii. For material removal rate, the machining parameters that provide significant effect are the wire feed rate (WF) and pulse duration (ON).

b. The optimum machining parameters has been determined. For surface roughness, the optimum setting is C1B2A1D1 and for material removal rate the optimum setting is B1C1A2D2.

c. Mathematical models for the machining of DF2 using WEDM have been developed.

The overall summary is as follows:

a. Analysis of variance (ANOVA) and regression analysis for this project were achieved with a 95% confidence level.
b. Confirmation tests carried out showed that generally the margin of error is acceptable.
c. The machining parameters pulse duration (ON) and wire feed rate (WF) are found to be the factors that provided significant factors that affect machining responses.

6.2 Recommendations

Based on the observations and findings in this study, future works may want to consider the following studies:

a. To study the effects other machining parameters like pulse off time, peak current, and wire tension so as to better understand their machining responses using WEDM.
b. To use different type of wire materials as electrode for future study to better understand the machining of DF2 using WEDM.