2. Objectives

2.1 Objectives of Proposed Research Work

The following are the main objectives of the proposed research work.

1. To evaluate the factors affecting Surface roughness, Material removal rate and kerf in WEDM process.
2. To select the appropriate range by Taguchi experimental design for conduction of experiments and to develop mathematical models using regression analysis based on response surface methodology (RSM).
3. To optimise process parameters of WEDM by suitable optimisation techniques.
4. To validate results by conducting confirmation experiments and to predict optimal combinations of process variables.

2.2 Phases of Experimentation

To achieve the objectives, present work has been done in three phases.

The 1st phase: a Feasibility study of the developed setup of WEDM
- Selection of control parameters
- One variable at time (OVAT) experimentation for WEDM
- Performance evaluation and selection of a range of parameters

The 2nd phase: Parametric trend and comparative analysis
- Experimentation on WEDM
- Parametric trend analysis of WEDM reference to others

The 3rd phase: Modelling and Optimisation
- Design of Experiments by Taguchi Design for WEDM
- Experimentation on WEDM
- Mathematical modelling using RSM
- Analysis of Variance (ANOVA) analysis of generated model
Objectives

- Response surface analysis
- Single response optimisation of WEDM for each response
- Multi-response optimisation of WEDM
- Conformity Experiments for Validating Optimization Results