In the name of ALLAH, Most Gracious, Most Merciful

Process parameter optimization of wire EDM on stainless-steel-304 material by using taguchi method

Supervised By

Sir Mohsin Raza

Submitted By

Hafiz Liaqat Noor (111831-079)

Shoaib Aslam (111831-083)

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Department of Science & Technology

University of Management & Technology Lahore

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Abstract

Wire EDM process is a highly complicated, time varying & sophisticated procedure. This is utilized in the field of molds, dies, precision manufacturing & accurate cutting etc. Any complicated design can be created with high grade of precision & surface finish utilizing Wire EDM. The output of this process is influenced by a huge number of input variables. Therefore an appropriate choice of input variables is very crucial to get maximum surface finish, maximum material removal rate and minimum machining time. The selection of these input variables depends greatly on the operator's choice & experience. Wire EDM is widely utilized in machining of electrically conductive materials when accuracy & precision is of prime significance.

In the present work WEDM machining is performed on work parts of Stainless Steel-304. Actually we wanted to find the **effect** of **Process Parameters** on **Surface Roughness** & **Material Removal Rate** applying on material with **Varying Thicknesses**.

So, we utilized **Brass Wire** with diameter of **0.18mm**. Process Parameters which we concerned are **Wire Speed**, **Wire Feed Rate**, **Fluid Pressure**, and they are used as our input parameters. We varied our input parameters to find out their effect on the material's Surface Roughness & Material Removal Rate. Profilometer has been used to measure the Surface Roughness.

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Chapter No 1

Introduction to Non-Conventional Machining

1.1 Introduction

Non-conventional machining processes are those machining processes which do not include the direct contact of cutting tool with work part during machining. In this category of machining we use one of a special kind of energy to remove material from work part.

There are three main categories of energies used in non-conventional machining.

- Thermal
- Electrical
- Chemical
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