

WEDM Parameter Optimization on ASIS D2 Steel

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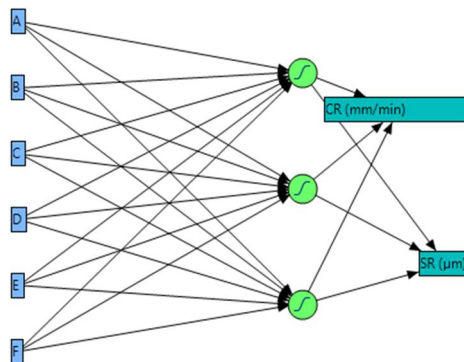
Abstract: In the present experiment, the effect of WEDM elements on pulse on and pulse off times, spark gap set voltage, peak current, and wire feed on cutting rate and surface roughness was observed. The DOE approach may be used to determine the machine's impact. The L27 orthogonal array is the best choice in this situation. ASIS D2 steel and brass wire are used in 27 tests on WEDM. Using this method, you may rapidly select the best settings and then test your conclusions. ASIS D2-grade steel is machined using brass wire. For this research, RSM modelling is being utilised to identify the most effective machine action within the limits of the experiments. The best way to get an acceptable surface quality and cutting rate with this ideal parameter is to validate the findings and choose the most effective choice available to you. ASIS D2 steel may be machined by future engineers and manufacturing units using this method to identify process parameters..

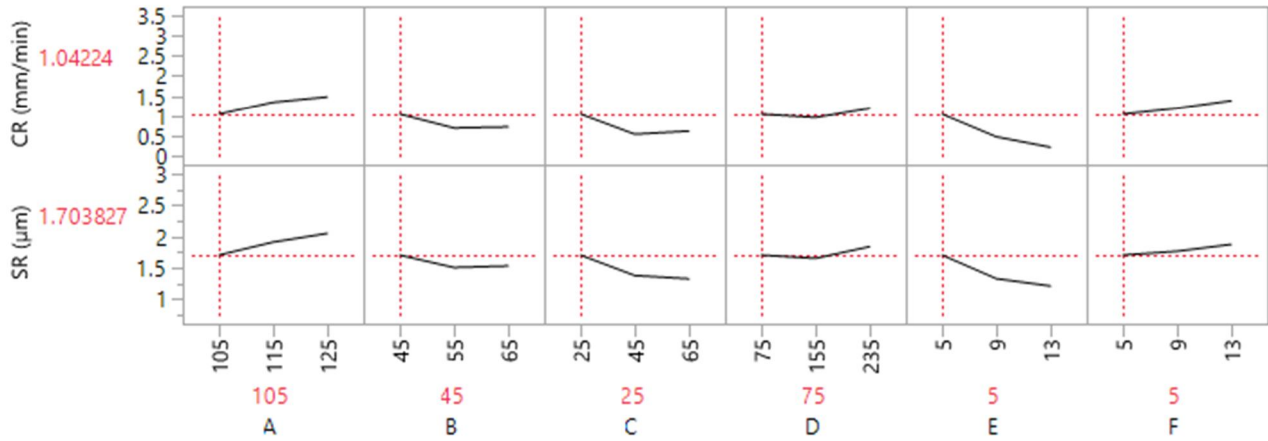
Keywords: ASIS D2 steel, RSM, Minitab, Taguchi method, Surface roughness (SR), Cutting rate (CR);

I. INTRODUCTION

WEDM is a subset of devices that are not typical. This sort of machine is now used by the majority of automation businesses, owing to its lack of reliance on cutting devices throughout the process. An electric current is established between the wires of a WEDM to perform its functions. An explosion occurs when an electrical spark crosses through a gap and causes the material to be vaporised. Because of the process's capabilities. Consequently, it may cut through any material that is hard, brittle or thin. Because this machine can create complex shapes, it is a major advantage. Because no cutting instrument is used, there is no vibration concern in this operation. The EDM concept is used in this machine, which removes material from the work piece by melting and vaporising it in accordance with the machine programme. The spark is created when two electrodes receive current from a dielectric medium. But the drawback is that it takes a long time to complete. High-intensity Wire-EDM. It's vital to get the most out of your resources, both in terms of energy and output.

II. DATA ANALYSIS



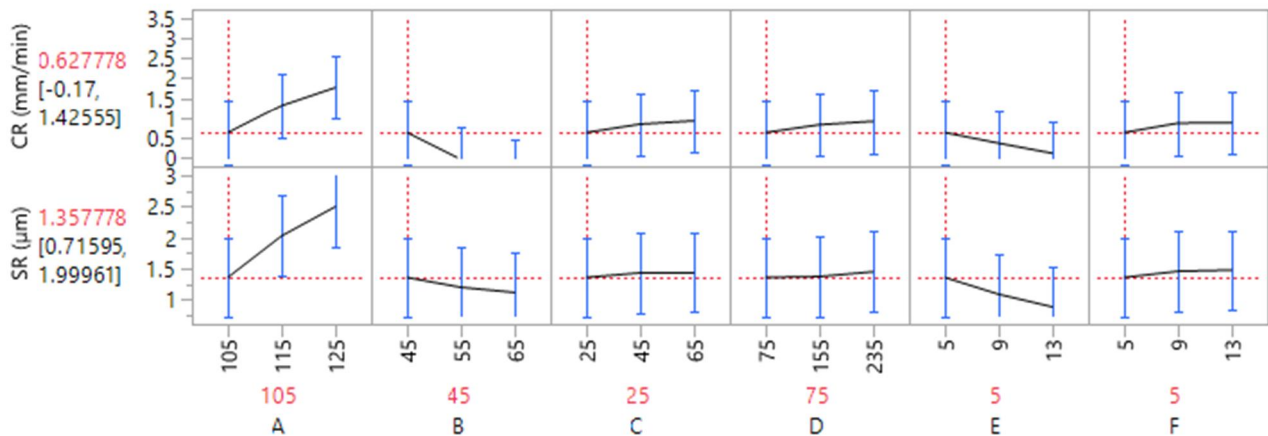


Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	12	12.829089	1.06909	3.7205
Error	14	4.022911	0.28735	Prob > F
C. Total	26	16.852000		0.0110*

Effect Tests

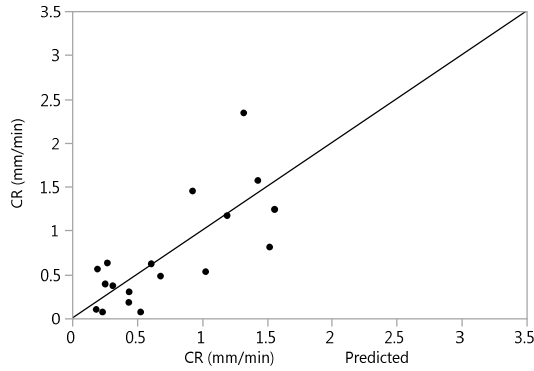
Source	Nparm	DF	Sum of Squares	F Ratio	Prob > F
A	2	2	5.9389556	10.3340	0.0018*
B	2	2	4.5369556	7.8945	0.0051*
C	2	2	0.4112667	0.7156	0.5059
D	2	2	0.3737556	0.6503	0.5369
E	2	2	1.2170667	2.1177	0.1572
F	2	2	0.3510889	0.6109	0.5567



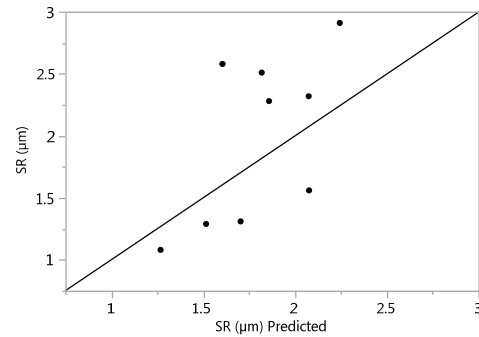
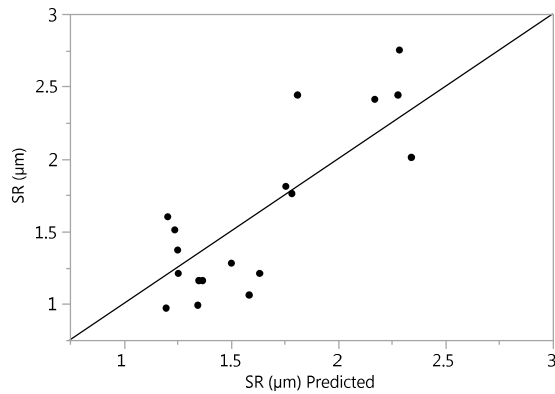
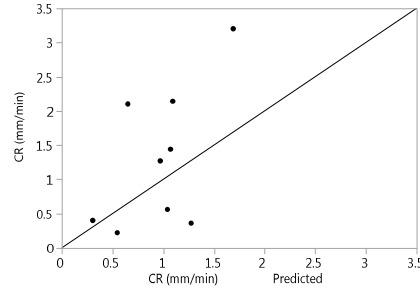
III. CONCLUSION

In this process we study about wedm machine and various parameters

Training



Validation



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