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(57) Abstract :

Wire cut Electrical Discharge Machine (WEDM) is an unconventional machining process which is widely used to produce a precise, complex irregular shaped job with internal cavities and difficult to machine electrically conductive materials. The WEDM process is governed by the various process parameters and the settings of the process parameters were done on the trial and error basis: which increases the job set up time and requires an operator with a high skill set. To overcome this limitation, a mathematical model is developed for relating the input process parameters and work-piece setting parameters of the WEDM process. Validation of the values has been done by setting workpiece thickness, wire wear rate and time taken for machining parameters are fed into the mathematical equations by which we can obtain the setting values of the process parameters. The results reveal that the proposed ANN algorithm paves way for the reduction in setup time of the workpiece on the WEDM including the machining time there is no downtime in the WEDM due to the tool wire breakage and also leads to a better surface finish of the workpiece. The outcomes of the research work lead to an increase in productivity, employability, machining quality and profit.

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