The wire electro-discharge machining technique is used in many operations, from the simplest cutting applications to the manufacturing of complex and delicate parts. Costs and the variety of wire used in the cutting process vary according to the particular workpiece to be cut. The literature on this subject features studies conducted on the surface roughness and the metal removal rate. However, the surface sensitivity in the manufacturing of cutting dies is not a crucial property. The most important variable, rather, is the cost involved in making simple cutting dies. In this study, a Böhler K100 workpiece and CuZn37 wire material has been used to find the optimal conditions for high quality surface roughness, maximizing metal removal rate and minimizing wire consumption. Furthermore, the metal removal rate related directly to the cutting speed was calculated and compared with the consumption. To facilitate calculation of wire consumption, the evolutionary programming module was used for modeling and derivation of the formula for calculation with 99 % accuracy.

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