

4th International Conference on **Electrochemistry**

June 11-12, 2018 | Rome, Italy

Experimental investigations of ECD process parameters**Harsh Thakkar, Alay Patel, Satisha Prabhu, Abhishek Kumar and Vishvesh Badheka**
Pandit Deendayal Petroleum University, India

Statement of the Problem: A rapid increment in demand of highly accurate, repeatable finishing process for high value added applications, like aerospace and automotive, has led to the development of technologies like electrochemical deburring (ECD). Thus, it is of utmost importance to evaluate and optimize the performance of ECD process. This study is focused on evaluation of ECD process by comparison of material removal rates and maximum current obtained by variation in process parameters like machining time, electrolyte concentration.

Methodology & Theoretical Orientation: The paper mainly aims to evaluate the performance of electrochemical deburring process by varying certain process parameters during the deburring of internal holes. These parameters include the cycle time, electrolyte type, electrolyte concentrations. The results are obtained by a comparative study of several experimentations and characterization of the deburred area.

Conclusion & Significance: The analysis of ECD process helps to obtain the optimum value of parameters that is essential to increase the productivity of industries that require deburring of components. Deburring of internal geometries can be done by various processes like hand deburring, honing, abrasive jet machining etc. but all these processes do not ascertain specific spatial control over the deburred area, which is possible with electrochemical deburring. Hence, it is important to evaluate the performance of ECD and also to check the economic viability of the process.

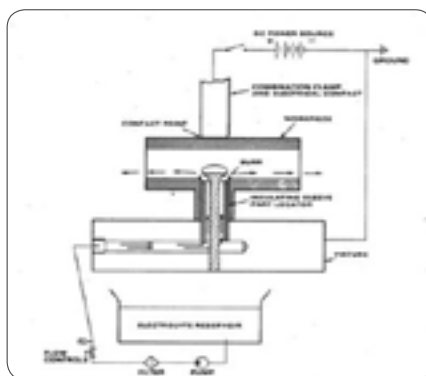


Figure 1: Electrochemical machining process schematic.

Recent Publications:

1. In Hyu Choi and Jeong Du Kim (1998) A study of the characteristics of the electrochemical deburring of a governor-shaft cross hole. *Journal of Materials Processing Technology* 75(1-3):198-203.
2. Lee E S, Won J K, Shin T H, et al. (2012) Investigation of machining characteristics for electrochemical micro-deburring of the AZ31 lightweight magnesium alloy. *Int. J. Precis. Eng. Manuf.* 13(3):339-345.
3. Mount A, Eley K and Clifton D (2000) Theoretical analysis of chronoamperometric transients in electrochemical machining and characterization of titanium 6/4 and inconel 718 alloys. *Journal of Applied Electrochemistry* 30(4):447-455.
4. S K Sorkhel and B Bhattacharyya (1994) Parametric control for optimal quality of the work piece surface in ECM. *Journal of Materials Processing Technology* 40(3-4):271-286.
5. H Hocheng, Y H Sun, S C Lin and P S Kao (2003) A material removal analysis of electrochemical machining using flat-end cathode. *Journal of Materials Processing Technology* 140(1-3):264-268.

4th International Conference on **Electrochemistry**

June 11-12, 2018 | Rome, Italy

Biography

Harsh Thakkar is pursuing graduation in Mechanical Engineering at Pandit Deendayal Petroleum University, Gandhinagar, Gujarat, India. He has been working on topic of Electrochemical Deburring for the past two and half years. He was the Member and Vice President of Team INDEAGLES who participated in SUPRA SAEINDIA, in which the team secured 56th rank for the first time out of 250 teams at national level.

harsh.tmc14@gmail.com

Notes: