Electrochemical Machining of Microwire

Kuznetsov, Kirill

Goal setting: experimental study of the dependence of current distribution and current density along the length of the processed item when electrochemical polishing of wire from geometrical dimensions of item and the amount of current supplied. Method development of optimal technological parameters of electrochemical polishing process and device for improvement of current density distribution during electrochemical polishing process of long-length items of micron thicknesses, allowing to increase the quality of processed surface and eliminating the current leakage. Method of determination of current density distribution on the surface of the long-length item along the length of electrochemical bath is based upon the direct measuring of current strength in the processed item when it is moving through the electrochemical bath in laboratory. Main results: - tables and graphs, built on the base of received measurements; - Method of determination of optimal technological parameters was developed from the analysis of graphs of current density distribution; - experimental module of electrochemical polishing was created. Conclusions: - non-uniformity of current distribution along the length of processed wire in the bath of electrochemical polishing is higher if: - diameter of wire is smaller and length of anode processing zone is bigger; - the value of current supplied is bigger; - method of determination of optima; technological parameters of electrochemical processing of metals was proposed, it will allow the engineers and laboratory assistants to decrease the time for determination of optimal parameters of electrochemical polishing process; - experimental module of electrochemical processing of wire was developed and manufactured.

Awards Won: