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鋁合金與銅合金於放電加工表面粗糙度之研究

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摘要

放電加工為一種廣泛應用於模具產業的非傳統加工方法，放電加工過程中電極與工件間保持極小的間隙(5~100.mu.m)，由於極間間隙相當狹小，因此加工所產生的加工屑不易自極間排除，此現象將導致極間無法充分回復到絕緣狀態，使得加工區域極易發生異常放電及短路現象，進而危害到加工品質。放電加工中極間狀態的穩定對加工特性深具影響。本實驗中選擇高壓電流、工作波寬、加工時間和伺服間隙等放電加工參數，探討其對鋁合金與黃銅合金表面粗糙度的影響。利用表面粗度測定器與 CCD 影像處理系統來量測，實驗分析結果希望能提供鋁合金與銅合金於放電加工製程應用的參考。

關鍵字: 放電加工;表面粗糙度;CCD 影像處理

Study of Electrical Discharge Machining of Aluminum and Brass Alloy on Surface Roughness

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Abstract

Electrical discharge machining (EDM) that is one of the non-conventional processes is extensively applied in mold industries. During EDM process, the tool electrode and the workpiece are separated with a small gap (5~100.mu.m). The gap distance between workpiece and electrode is extremely small, so the machining debris resulted from EDM process is difficult to remove out of the machining gap. Thus, the isolated condition does not recover completely within the gap, so the situations of abnormal electrical discharge and short circuit will result in the machining zone during EDM process. The stability of EDM gap condition significantly affects the machining characteristics. The main machining parameters of EDM such as electric current of high voltage, machining wave width, machining duration and servo gap were chosen to determine the effects on the surface roughness (SR) of aluminum and brass alloy. Surface roughness of survey device and CCD image process system are utilized measuring. The present experimental results confirm the effectiveness of the proposed electrical discharge machining (EDM) of aluminum and brass alloy.

Key words: Electrical Discharge Machining (EDM);Surface roughness; CCD image process