



**SURFACE INTEGRITY OF MATERIAL MACHINED USING ELECTRICAL  
DISCHARGE MACHINING (EDM) WITH AND WITHOUT VIBRATION**

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“I declared that this thesis is the result of my own work except the ideas and summaries which I clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree”.

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## ABSTRACT

Electrical Discharge Machining (EDM) is a non-traditional machining which typically used for hard metals such as titanium, hastelloy, kovar and carbide where traditional machining technique is ineffective. In dealing with EDM the materials must be electrically conductive. The principle used in EDM is based on the erosion of metals (workpiece) by spark discharge; come from basic knowledge where conducting materials separate with small gap and will form arc. Meanwhile EDM with vibration require addition external equipment on machinery. In Malaysian industries, EDM is widely used for machining plastic injection moulds, stamping dies and parts of automotive, defense, electronics and telecommunication industries. EDM without vibration is common in Malaysian industry while EDM with vibration is hardly found. This study focus on investigating the surface integrity of material which has undergo machining with and without vibration. The investigation involves two types of materials: ASSAB 718HH and SKD 61, which were machined using EDM with different method, polarity and current. Based on the result obtained, when EDM with vibration used the diameter, roundness, roughness, DOC and WLT give the good condition on surface integrity compared to EDM without vibration.

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