

Innovative Manufacturing Processes

Electro Discharge Machining (EDM)



Available Equipment:

Charmilles ROBOFORM 22 Sinker EDM

- 4 Axis – x,y,z & zrot
- Automatic electrode change

EDM is a form of spark machining carried out under cutting oil to accomplish controlled removal of material without applying direct mechanical cutting force.

Capabilities – Restrictions:



- Material of any hardness can be cut
- High accuracy and good surface finish are possible
- No cutting forces involved
- Intricate-shaped cavities can be cut with modest tooling costs
- Holes completed in one “pass”

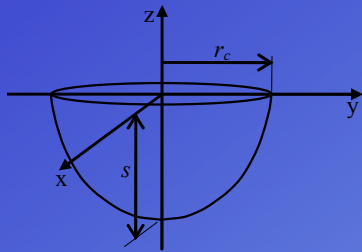


- Limited to electrically conductive materials
- Slow process, particularly if good surface finish and high accuracy are required
- Dielectric vapor can be dangerous
- Heat Affected Zone (HAZ) near cutting edges
- Die sinking tool life is limited

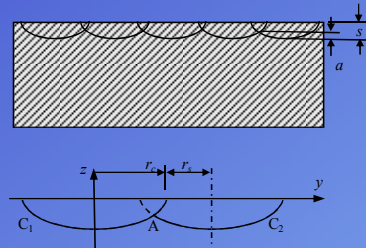
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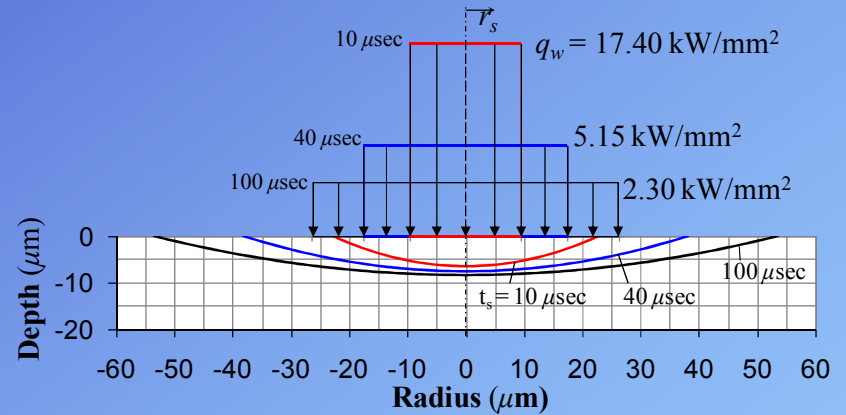
Process Modeling – simulation



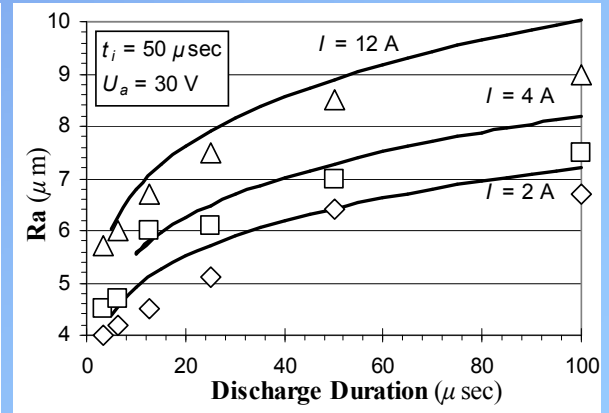
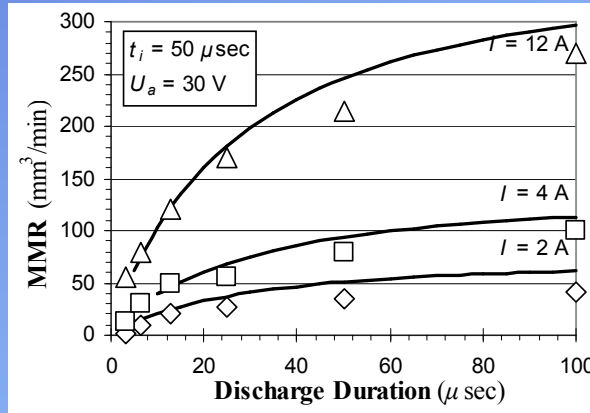
Crater geometry modeling



Surface roughness simulation



Experimental verification



REF: Salonitis, K., A. Stournaras, P. Stavropoulos and G. Chryssolouris, "Thermal modelling of the Material Removal Rate and Surface Roughness for EDM Die-Sinking", International Journal of Advanced Manufacturing Technology, (In Press, 2008), DOI 10.1007/s00170-007-1327-y.