Determination of the optimal servo feed speed by thermal model during multi-pulse discharge process of WEDM

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PII: S0020-7403(17)32494-3
DOI: 10.1016/j.ijmecsci.2018.05.006
Reference: MS 4315

To appear in: *International Journal of Mechanical Sciences*

Received date: 5 September 2017
Revised date: 8 April 2018
Accepted date: 1 May 2018

Please cite this article as: Zhi Chen , Guojun Zhang , Fenglin Han , Yanming Zhang , Youmin Rong , Determination of the optimal servo feed speed by thermal model during multi-pulse discharge process of WEDM, *International Journal of Mechanical Sciences* (2018), doi: 10.1016/j.ijmecsci.2018.05.006

Highlights

- Considering the latent heat of evaporation, a modified thermal model is developed to obtain discharge crater geometrical size in single pulse discharge process, and this modified model is proved to be with higher precision than other thermal models in previous researches.
- A simple thermal model is established to forecast the achievable material removal rate and optimal servo feed speed in multi-pulse discharge process on the basis of modified thermal model in single pulse discharge process.
- A set of cutting experiment is implemented at different servo feed speeds, and it can be found that optimal servo feed speed can significantly decrease the proportion of abnormal discharge state, and simultaneously gain highest machining efficiency and precision.