The Study of Corner Cutting Control for Wire-Cutting Electrical Discharge Machine

呂宜澤、張義芳

E-mail: 9509702@mail.dyu.edu.tw

ABSTRACT

This study establishes the self-tuning opereation parameters and gap controller in opening architecture type computer numerical controller (CNC). A setp-wise changed operation paramers will be performed from the data base in CNC, in order to reach an appropriate dimention allowance. The reference input of the gap control system will also changed according to accual metal removeal rate. The experimental results show precision of corner cutting comparatively will the results of motion hold at corner in one second.

Keywords : Open Architecture ; WEDM ; Gap control

Table of Contents

REFERENCES

[1] H. Obara,T. Ishizu, T. Ohsumi and Y. Iwata “ Simulation of Wire-EDM ”,12th Internation Synposium for Electro-Maching (ISEM-12),1998,Germany,pp.98-108.

[2] G. Gamo, M . Kinoshita and H . Obara, “ Method of Reducing Wire-cut Electric Discharge Machining Errors ”, U.S. Patent No.4546227, 1985.

[3] W . L. Dekeyser and R . Snoeys, “ Geometrical Accuracy of Wire-EDM ”, Proceedings of the Internation Synposium for Electro-Machining (ISEM-9),1989, pp.226-232.

[4] T. Magrara, T. Yatomi, H. Yamada and K. Kobayash , “ Study on machining accuracy in Wire-EDM PartI - Improvement of Machining Accuracy of Corner Parts in Rough-Cutting ”, J. Japan Society of Elec.Mach., Vol.25, No. 49, 1991, pp.23-32.(in Japanese).

[5] Gotaro,G., Kinoshita , M. “ Wire-Cut Electric Disharge Machine Controller For Compensating the Machining Corner Parameters ”, U.S.

Patent No. 4,523,073,(1985).
[6] Magara T., Yatomi,T., Yamada, H., and Kobayashi, K.,“ Studyon Machining Accuracy in Wire-EDM Part I - Improvement of machining accuracy of corner parts in rough-cutting ”, J. Japan Society of Elec. Mach., 25(49), pp.23-32.(in Japanese) , (1991).
[7] M.Kinoshita and H.Obara,“ Method of Measuring Flexure Value of Wire Electrode ”, U.S. Patent No. 4622450 , 1986.
[8] S.Izumiya, T. Tsutsumi, I.Higashi, and T.Sakuragawa,“ Method for Controlling A Wire-cut Electric Discharge ”, U.S. Patent No. 5504294, 1996.
[9] W.J.Huse, Y.S. Liao, S.S. Lu,“ Fundamental geometry analysis of wire electrical discharge machining in corner cutting ”, International Journal of Machine Tools & Manufacture 39 (1999) ,pp.651-667.Taipei.Taiwan.
[10] 顏木田，莊宗仁，“ 線切割放電加工隅角粗加工軌跡補償與加工參數調整策略之研究 ”華梵大學機電工程研究所碩士論文，民國九十年六月。
[11] 林楠盛，“ 放電加工技術之應用理論與實務 ”，機械工業民國八十年十月，pp.257-274，台北，(1991)。
[12] 新代科技“ Open CNC Macro 發展工具使用手冊 ”，8.6版，新竹，(2002.5)。
[13] 新代科技“ Open CNC MLC 發展工具操作手冊 ”，2.1版，新竹，(2002.11)。
[14] 張義芳，彭子杰，“ 放電加工機開放架構式電腦數值控制研究 ”，大葉大學機械工程研究所，第22屆全國機械工程學術研討會，中壢，2005。
[15] 張義芳，廖祥閔，“ 線切割放電加工機軌跡控制研究 ”，大葉大學機械工程研究所，第22屆全國機械工程學術研討會，中壢，2005。