The study of motion control for high speed measuring system

王家彬、張義芳

E-mail: 321895@mail.dyu.edu.tw

ABSTRACT

In this study, a high-speed measurement system was established by combining a open programmable logic controller (OPLC) from Fuji Electric Co., Ltd. with servo motors and sensor equipped on Z-axis. The distance between sensor and the surface of measuring part was detected by applying a gap controller. The gap controller was equipped for Z-axis of high-speed measurement system. The gap controller was programmed by using Structure Text for PLC. A root-mean-square error method was applied to evaluate and find out the optimized gap controller parameters. Finally, experiment results were achieved by taking experiment on this proposed high-speed measurement system. The experiment results show that the proposed system could be applied to practical manufacture.

Keywords : programmable logic controller、gap control、high-speed measurement system

Table of Contents

REFERENCES

[1]Yuko HORI, Mitsuru BABA and Tadataka KONISHI, “ A Simultaneous High-speed Measuring Systemof Multiple Points ”, Faculty of Engineering, Okayama University, IEEE (1994) , Page(s): 1365 - 1368 vol.3 。

[2]Toshiro Tsukada, Keiko Makie-Fukuda, Takafumi Kikuchi *, Masao Hotta, and Ihniaki Ando, “ High-speed Measuring System for Testing Mixed-Signal-LSI Performance and Its Application to Digital-Noise Measurement ”, Cennal Research Laboratory IEEE (1994) , Page(s):1294 - 1299 vol.3 。

[3]OKADA, Katsuya HIRACHI, and Shigeyasu NAKAGAWA, “ DEVELOPMENT OF A HIGH-SPEED SYSTEM MEASURING A MAXIMUM POWER POINT OF PV MODULES ”, Electric and Control System Engineering Course, Maizuru National College of Technology, IEEE (2006) , page(s): 2262 - 2263 。

[4]Xiaofeng Zheng, Qiyong Zeng and Kai Wu,Zhonghua Yu,Xiaotong Li, “ Cutting Temperature and Force Data acquisition and measuring system Design in High Speed machining ”, China Jiliang University Zhejiang University China Jiliang University , IEEE (2010) , page(s): 882 - 885 。

[5]JOHN A. SARGROVE, “ Automatic high-speed measuring systems for complex products and shapes: interdependent computation and cybernetic inspection machinery ”, U.D.C. , IEEE (1964) , page(s): 337 - 348 。

[6]Kyung Mm Jeong", Jae Seon Kimb Kyoung Chul Koh'' and Hyung uck Choc, “ Development of PMP system for high speed measurement of solder paste volume on printed circuit boards ”, Dept ofMechanical & Control Engineering, Sunmoon University International Society for Optical Engineering (SPIE), Proceedings of SPIE Vol. 4564, pp.250-259, 2001 。

[7]Nod Clarke-Hackston1, Manfred Messing1, Dieter Loh1, Rainer Lott1, “ Modern high precision high speed measurement of segments and moulds ” VMT GmbH, Stegwiesenstrasse 24, 76640 Bruchsal, GERMANY , kinematics 。

[8]阮長江, “ The Study of Optimal-Feedrate Controller for a Computerized Numerical Controlled Machine ”, 博士論文 , 大葉大學 2010。

[9]K.K.Tan S N Huang and H L Seet , “ Geometrical Error Compensation of Precision Motion System ”, Using Radial Basis Function IEEE

Transactions on Instrumention and Measurement Vol 49 No.5,2000。
[10] 陳天生、寶建編著“ 數控工具機原理與實習 ”高麗圖書股份公司民國九十二年元月。
[11]富奇國際科技股份有限公司“ 硬體規格說明書 ”。
[12]富奇國際科技股份有限公司技術部編譯 “ D300win說明書 ”。.
[13]AS-440-05的操作手冊。
[14]楊錫凱、陳世宏編譯“ 可程式控制器實習與電腦連線應用 ” 全威圖書有限公司(2003) 。
[15]許慶芳、許峻銘 許怡真編譯“ Visual Basic 6.0 入門與應用 ” 松崗資訊(2001) 。
[16]王進德 編箸 “ 機電整合-圖形監控應用實務 ” 全華圖書(2003) 。.
[17]范逸之、陳立元 編箸“ Visual Basic與RS232串列通訊控制最新 版 ” 文魁資訊民國90年。