Design Analysis and Improvement of Synchronized Mechanism of the Telescopic Cover

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ABSTRACT

High-speed and high-precision are trend development of machine tools. In order to reach a high-speed and high-precision demand, the major components must be well-designed, manufactured and assembled, where the high-speed movement of the retractable cover plays an important role. The designs and manufactures of high-speed telescopic cover have a good foundation domestically.The topic combines the works of industry and academia to design parameters of the measurement by the method of experiment. To be aimed at the impact on service life of the retractable cover and reliability of the same actuator, we can use dynamic analysis to build up the analytic model, as the foundation of design. Moreover, we can provide improved project of actuator adapter design to enhance the smooth operation of telescopic cover degree and reliability.The advantages and disadvantages of machine tool depend on the quality of performance and accuracy of processing, on which the major manufacturers focus.However, from the users ’ points of view, besides the performance of these characteristics, the care of the details from the manufacturers attracts customers more. For example, the details such as water leak-proof, anti-litter, durability and so on can not be ignored.Even a damage on a small piece of sheet metal results in opportunities for downtime caused by collision and the customer will have to lay-off and repair the intangible loss.

Keywords : machine tools、telescopic cover、product mix

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REFERENCES

[1]陳世昌，”工具機高速進給之最近趨勢”，機械工業雜誌，86年3月，pp.210-215。
[2]梁承霖，”高速進給系統伸縮護罩連桿式同動機構運動分析”，碩士論文，國立中興大學機械工程研究所2003。
[3]蔡一昌，“高速主軸動平衡之補償設計”，國?中興大學機械工程學系，碩士?文，中華民國93?。
[4]姜唐傑，主動式氣壓配重系統於高速工具機之研究"，國?成功大學機械工程學系，碩士?文，中華民國96?。
[5]Hiroaki Funabashi and Kiyoshi Ogawa and Mikio Horie and Hiroshi IIDA, ” A Dynamic Analysis of the Plane Crank-and- Rocker Mechanism with Clearance ”, Bulletin of the JSME, Vol. 23, No.177,p.446-p.452,1980.
[6]S.Dubowsky and F.Freudenstein, ” Dynamic Analysis of Mech- anical Systems With Clearances(part1:Formation of Dynamic Mode), Journal of Engineering for Industry,February,1971 p.305-p.309.
[7]S.Dubowsky and F.Freudenstein, ” Dynamic Analysis of Mech- anical Systems With Clearances(part2:Formation of Dynamic Mode), Journal of Engineering for Industry,February,1971 p.305-p.309.
[8]R.S.Haines,“ A Theory of Contact Loss at Resolute Joints with Clearance ”, Journal Mechanical Engineering Sciences, Vol22,No.3, p129-p.136, 1980.
[9]S.G.Dhande and J.Chakraborty, ” Analysis and Synthesis of Mechanical Error in Linkages-A Stochastic Approach ”, Journal of Engineering for Industry , p.672-p.676, August,1973.
[10]經濟部工業局八十四年度精密機械與自動化技術研究發展 計畫，工具機護罩設計技術研討會，台中精密機械研發中心(PMC)，1985年。
[11]台灣引興股份有限公司，高速化工具機導軌伸縮保護蓋研 究，1999年8月。
[12]C. H. Jou,“ Dynamic Stability of a High-Speed Slider-Crank Mechanism with a Flexible Connecting Rod ”, Master ’ s Thesis, University of Chun Yuan, Chung-Li,Taiwan, Jun. 1992.
[13]K. W. Lin,“ Vibration Analysis of the Crack and Flexible Connecting Rod in a Crank-Slider Mechanism ”, Master ’ s Thesis, University of Chun Yuan, Chung-Li,Taiwan, July. 2001.
[14]R. F. Fung,“ Dynamic Responses of the Flexible Connecting Rod of a Slider-Crank Mechanism with Time-Dependent Boundary Effect ”, Computers & Structures., Vol. 63, No. 1, p.79-p.90, 1997.
[15]R. F. Fung,“ Dynamic Analysis of the Flexible Connecting Rod of a Slider-Crank Mechanism ”, Transactions of the ASME, Journal of Vibration and Acoustics., Vol. 118, No. 4, pp. 687-689, Oct. 1996.
[16]中華民國專利公報B21D24/02“ 防塵護蓋之製造方法”， 2001年。
[17]中華民國專利公報B23Q11/00“ 新式之防塵護蓋”， 2001年。
[18]中華民國專利公報B23Q11/08，“ 具剪式連動裝置之防塵護蓋”， 2005年。
[19]中華民國專利公報B23Q7/00“ 具快速組裝定位之防塵護蓋滑動輪結構”， 2006年。
[20]中華民國專利公報B23Q11/00“ 防塵護蓋之創新構造”， 2002年。
[21]中華民國專利公報B23Q11/08，“ 防塵護蓋之滑塊與護蓋之改良結合構造”， 2002年。
[22]中華民國專利公報B23Q11/08“ 多連桿式防塵護蓋”， 2005年。
[23]陳宏志編著，”銲接結構強度學”，復文圖書出版社。
[24]賴美?，?並?混合式工具機之?型合成及運動分析，碩士?文，國?中正大學機械工程研究所，嘉義，2000。
[25]J.P.Wang，An investigation on dynamic plane upsetting.Journal of Materials Processing Technology Vol.123 2002.
[26]Nadia a.,The force required for rolling steel strip under tension.J.Appl.Mech.1939[27]黃禮伸，”平板對接銲之殘留應力分析與實測”，碩士論文，國立成功大學機械工程研究所2002[28]台灣引興股份有限公司剪刀型護罩產品型錄。
[29]A. Nadia,“ The force required for rolling steel strip under tension, ” J.Appl.Mech.1939[30]喬威進科技股份有限公司,"VB系??門型加工機機台型?",2006。
[31]永進機械股份有限公司,TV_C機台型?,2005[32]台灣引興網頁資?www.keyarrow.com[33]亞崴機電股份有限公司,"HV系?高??五面加工機機台型?",2005[34]尚園科技股份有限公司,"綜合機台型?",2005[35]機械工業技術雜誌"?值控制CNC工具母機的設計製造及其應用技術(37)",1999 二月