Analysis and Design of Intelligent Electric Stringing Machines

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ABSTRACT

This thesis investigates in the analysis and design of an intelligent electronic stringing machine. With considering the human-factors engineering, we design a floor stand and stringing mechanical structure to obtain a high-precision force control and automatically adjust elevation and tilt of string machine. Moreover, we also design electrical circuits including a touch screen, a force sensor, motor drivers and position measurement of floor stand. Based on the PIC microcontroller of Microchip cooperation, we develop control and interface software to integrate interface circuit, force and position sensing circuit and motor drivers. The main features of this intelligent stringing machine are that not only can the high precision force control be achieved but also the elevation and tilt can be adjusted to satisfy the ergonomic requirements. Experiments performed on a practical string machine demonstrate the effectiveness of the proposed methods.

Keywords : Embedded microcontroller ; Touch screen ; Stringing machine ; Motor controller

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