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Abstract
In the paper, the control system of a computerized flat knitting machine is designed and implemented largely. A permanent magnet synchronous motor is used to operate the machine. We design the motor drive that discrete power MOSFETs are adapted in the inverter to reduce the cost. In order to get zero steady-state error, the PI control is considered in the velocity control loop. Microcontroller, 8052, programs the drives of seven step motors to manipulate the controls of cam, left stitch, and right stitch of front-end and back-end, and racking. The color and style of the accessories of clothing is programmed by using a keyboard, PC, or an external memory card. There are three communication protocols, RS232, RS422, and RS485, used in the system to transfer the instructions and data.

Chapter 4 is used to apply the technology of the product development process to expect finishing the duty in each task and then accomplishing the product design and implementation in considerable time. Gantt chart used in this chapter is a project planning tool that can be used to represent the timing of tasks required to complete a project. Hope these kinds of research can be finished in shorter time to reduce the time wasting.

Because of the technological change with each passing day, innovative machines are designed and implemented in a very short time. That’s the reason why value engineering will be applied as part of my gradation thesis. Value Engineering is an effective methodology for reducing costs, increasing productivity, fostering innovation, eliminating unnecessary design element, ensuring cost-effective project, and improving quality with required performance, reliability, quality and safety in a product, facility, design, system, service or process. Deeply hope this could supply a new thought to innovate new products.
Advisory Committee Ming-Shyan Wang - advisor

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