



## **System Description:**

PCI-1240 was found to have the required motion control features, and by using an Advantech design team, the card was redesigned to use the PC/104 form factor for better vibration tolerance.

The processing requirements were low, so ADAM-5510 with its low-cost x86 processor was used as a basis for creating a CPU card with PC/104 form factor. The CPU card was also equipped with RAM and onboard vibration-resistant flash memory. The flash memory is used to store DOS, the sewing program and a selection of patterns. Patterns can be changed by inserting a floppy disk and loading the patterns by DOS commands.

The production of a sock with a full pattern takes about 30 seconds. This excludes the toes, which are done in a second machine. After preparing thread and choosing a pattern from the hundreds stored in memory, the operator presses a button to start sewing. One axis of the customized PCI-1240 is used to rotate the sock, another to move the needle up and down, and a third axis feeds the elastic for the edge.

The sewing speed is controlled by the computer, and is set on the basis of material thickness, the required stitch length and any speed limitations set by the user. During, and after sewing, the LCD display panel shows the type of thread, length of threads, number of stitches and other sewing data.

## **Conclusions:**

- n Increased production rate of over 30% compared to other proprietary systems
- n Improved sewing quality and consistency
- n The machine is simple to operate and has been robustly built to avoid vibration and machine crashes
- n Very friendly learning curve for operators
- n No need to translate pattern files after output from PC applications.