



Smart Needle Management System for Apparel Industry

W.P.P.A. Induranga, T. Mithurshan, M.P.U. Isuranga*

Department of Engineering Technology, Faculty of Technology, University of Ruhuna, Sri Lanka

*Corresponding author: uditha@fot.ruh.ac.lk

ABSTRACT

The apparel industries are now competing for the world's best position in the competitive world. They were highly focus on forced to reduce costs, save time, increase their productivity, adapt to the demand cycle, and improve quality because of increased competition and product diversification. A needle is a critical component of the clothing manufacturing process. Most of the apparel industries including BEL are using manual needles issuing method. Therefore, needle management is critical to achieving high production efficiency. The garment sector has always relied on registers and manual data sheet-based for monitoring and management practices. It can have a detrimental effect on the manufacturing process, resulting in unannounced production shutdowns and difficulty in comparing actuals to forecasted figures. This study proposed an automated web-based needle management system with a needle issuing device. This system has three major parts, including web application, database, and needle issue device. All these components work together to improve the efficiency of the process. The proposed system would provide real-time, accurate, and more organized information on needle issuing process. It provides daily, monthly, and annual reports and charts, as well as current needle stocks, to aid in data analysis and decision making. Authorized users can operate and monitor the needle management system by logging into the platform. Also, remote control of the needle issuing apparatus is possible via the web application. Through the online application, all data is kept in the database, and the necessary analytics are displayed in the web application using that data. It takes around ten seconds to issue a needle using the system. This technique is 50% more effective than the manual method. The needle management system can be considered effective and reliable for the apparel sector based on the results of the tests conducted.

Keywords: *apparel industries, needle management system, needle issuing device, web application*