

Automated Fabric Hook-and-Eye Closure Feeding System

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Pad printing is a popular tampography method used in garment manufacturing for printing a two-dimensional picture onto a three-dimensional object. Currently, Sri Lankan apparel industry utilizes human operators to insert, position and remove fabric pieces for the pad printing process. This study developed an automated solution for the insertion and removal of bra eye closures to a pad printer. The implemented system consists of a vacuum suction gripper coupled with a linear actuator, a fabric separation mechanism, and a vacuum suction generator. The system was designed, fabricated, and tested for validation at an apparel manufacturing facility. Experimental testing in the production environment demonstrated an accuracy of 88% in separating and positioning fabric samples for printing. This study used an innovative approach to automating a labour-intensive process in the apparel industry, showcasing the potential of integrating mechanical design and automation in manufacturing systems.

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