Minimizing the Cutting Damages While Maximizing the Cutting Efficiency in the Apparel Industry

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In the apparel industry, higher number of garments should be sewed under the given requirements. Damaged panels can be fixed by replacing them with a re-cut. Area allocated for the finished cut (market place) is contributed to the sewing department to achieve targets aligned to lean. A pre-plan under some constraints will maximize daily cut quantities which will increase the number of sewed garments. The objective of this paper is to use principles of optimization related to minimizing wastage of the fabric while maximizing the cutting efficiency by identifying the parameters which are related to the laying and the cutting process of the garment industry. Related factors are identified during the laying process as ratio, marker length and number of plies for the size variation. The problem is broken down into roll format and lap format which are 2 laying formats. Size variation of 3 parts of a garment called front panel, back panel and gusset, marker length, ratio, number of plies, cutting time and laying time per layer and the cut quantity has being recorded (per unit) under the mentioned 2 formats. According to the analysis panel variation does not depend on the ratio, number of plies and marker length. In conclusion the cutting efficiency is maximized by changing those 3 variables. The results show that the optimal ratios are less than 25 and 27 for the lap format and roll format respectively. The cutting process requires an average time of 72 minutes per layer. This method reduces laying and cutting time per layer by 20-30 minutes by keeping the quality of the cut panels unchanged. In comparison, due to the decreased ratio and increased number of plies, the marker length is automatically reduced along with the length of the cutting tables which contributes to save some square feet for the sewing department. 80% of marker efficiency can also be satisfied with the new solution. Using these multiple objectives, daily production can be increased.

Keywords: Marker length, Number of garments per layer, Number of plies