Cutting to Make a Lace

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The concept of this dress was to create a delicate lace dress for special occasions combining aesthetics with technology, specifically, digitizing of the patterns and laser cutting. The feeling of happiness, elegance, and romance derived from the white lace wedding gowns (Bickham, February 9, 2015) were transferred into a modern and wearable dress by designing a lace-like fabric using laser cut. Laser cutting technology has been widely applied in textile and clothing industries because it has many advantages in terms of high speed in cutting, smooth cutting edge, and high precision (Qiu, Xu, & Li, 2010). Illustrator software was used to design a repeated lace-like fabric by combining a damask-inspired pattern and a punched oval pattern.

Figure 1. The images of the dress (front view on the left and back view on the right)

A panel cap sleeve dress with an unbalanced flounce hem was designed using flat pattern and draping techniques on a size 8 dress form (see Figure 1). Then, the garment patterns were directly digitized into OptiTex PDS. On the digitized pattern, the lace-like repeated pattern was strategically placed on the front, back, two-pieces of the side, and three-pieces of flounce hem piece. The challenge was to place the 2D designed lace-like pattern onto the several pieces of the 3D garment piece minimizing breaking of the pattern. Because the bed of laser-cutter was not big enough to cut a continuous pattern for the flounce hem (Perry, 2014), the designer tried to solve this problem by separating the pattern into three pieces. In addition, the back pattern of the dress was divided into two pieces for the invisible zipper. To add more aesthetic pleasure to the dress, the punched oval pattern was intentionally deleted in the top areas of the dress for front, back, and sides of the dress. This makes the dress look high-waisted. Furthermore, several curved and straight lines were added to connect the damask-inspired pattern to aesthetically and visually emphasize the curviness of the upper body and to make the waist look thinner.

Next, white 100 percent polyester satin was placed on a dimension of 39" by 24" and was cut using the Laser Engraving Machine (Speedy 400). The reason for using polyester for laser cut was to burn the edges of the cut sides so that it will not fray. To show the lace-like pattern more effectively, champagne color fabric for front, back, and flounce pieces and blush color crepon sheer for the side pieces were chosen as the underlay. For the top areas, small pieces of fusible bonding web were used to attach the laser cut patterns without the punched oval background to the base fabrics (Shin & Hwang, 2014).

Figure 2. Details

The design of the lace-like fabric used for this dress contributes to the field of textile and apparel design in that this is an innovative application to replace existing textile process for the lace fabric. As a result, the dress looks more elegant with the glossy surface of the lace-like fabric than with the knitted or crochet lace fabric.

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