

Carving through Rose Windows

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Figure 1. Details of laser cutting

Integrating new technologies such as computer-controlled laser beams in the design process allows fashion and textile designers to access to new solutions and develop creative designs. The digital tools also enable designers to create an engineered print where both digital print and digitally-fitted garments can be brought together (Bowles & Issac, 2009).

The purpose of this design was to incorporate pattern digitizing, laser cutting, and engraving to develop a two-piece dress inspired by a rose window found in the Gothic structure, the Chartres Cathedral in France. Of specific interest to the designers was the development of complex rose window patterns and exploration of utilizing laser cutting and engraving techniques. The power and intensity of a laser can be easily controlled (Ondogan, Pamuk, Ondogan, & Ozguney, 2005), providing a designer with a variety of surface design options.

The design and construction process for the dress included: (a) creating the garment patterns through draping methods, (b) digitizing the pattern pieces into Opti-Tex, (c) creating engineered pattern designs for laser cutting in Adobe Illustrator by rotating 12 circles and

filling the overlapped spaces with geometric figures, such as rosettes and spherical triangles, (d) creating engraved lines inspired by the interior of the cathedral by directly drawing on the digitized top patterns with a calligraphy pen tool using various strokes, (d) laser cutting and engraving the fabrics, and (e) constructing the garment: the hemline of the dress was hand-rolled and laser cut pieces were machine stitched on the skirt.

The long sleeve crop top was made with black velvet and was engraved with 100W, 40.00V and 500Hz laser settings. The flare skirt was made with off-white organza and black pleather laser cut circles with 80W, 1.00V and 1000Hz settings: these fabrications were chosen since laser cutting creates a clean edge on the pleather. The design follows Gothic aesthetic by creating a high color contrast between the organza and the stark black pleather. This design demonstrates an innovative way of applying computer controlled laser beams by engineering complex patterns of rose windows in a 8-piece garment patterns, confined by the cutting surface area of the laser cutter. The design demonstrates two different uses of the laser beams, cutting and engraving, in one look. It also enriches creative design scholarship in textiles by challenging designers to explore techniques of laser engraving and cutting by strategically placing digital pattern pieces that reduce time and materials in the design process.



Figure 2. Front view

References:

- Bowles, M., & Issac, C. (2009). *Digital Textile Design*. Lauren King: London.
- Ondogan, Z., Pamuk, O., Ondogan, E. N., & Ozguney, A. (2005). Improving the appearance of all textile products from clothing to home textile using laser technology. *Optics & Laser Technology*, 37(8), 631-637.