

SMART FASHION: CONNECTION BETWEEN HAUTE COUTURE AND THE NEWEST TECHNOLOGY

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Abstract: *The paper examines the use of smart technologies in the design of modern clothing of the luxury segment. The research was conducted on the basis of the analysis of the activities of modern designers, artists and enterprises. The most well-known and widespread ways of using smart technologies in clothing design are outlined, such as: nanotextiles, 3D printing, built-in sensors, digital clothing.*

Key words: *smart technologies, innovations, 3D printing, nanotextiles, sensors, digital clothing.*

1. INTRODUCTION

Smart technologies are an important segment of the global fashion industry, which is actively developing today. The creation of smart clothes allows to open new opportunities for the development of the fashion industry. Many designers combine their fashion creations with high-tech processes to create original designs. Therefore, the purpose of this study is to analyze the most common ways of using smart technologies in Haute Couture clothing design.

2. METHODOLOGICAL PART

The paper used an analysis of literary sources on issues of designing clothes with smart technologies; system analysis; synthesis of research results.

3. RESULTS AND DISCUSSION

A significant number of modern designers are taking the fashion industry to a new level, combining traditional design with innovative technologies. It is possible to single out the following main areas of using modern technologies when designing Haute Couture products: nanotextiles, 3D printing, built-in sensors, digital clothing.

The use of innovative fabrics in the design of clothes mainly provides an opportunity to take a step forward in the practice of sustainable and ecological living. So, in September 2022, at the Paris Haute Couture Fashion Week, the founder and managing director of the Fabrican company [1] Manel Torres presented a revolutionary spray-on fabric technology (**figure 1**). The liquid suspension, applied via spray gun or aerosol, forms a non-woven material as soon as it comes into contact with a solid surface, including human skin. Fabrican's spray-on fabric technology solves sustainability issues in the fashion industry, as the material can be washed, reused and finally, when the garment has come to the end of its use, dissolved to be sprayed again.

Leading Haute Couture fashion designer Iris Van Herpen, who specializes in high-

tech 3D printing methods, combines traditional craftsmanship with the newest materials and technologies. The clothes in her Fall 2022 collection (**figure 2**) were designed using technologies that communicated ideas of beauty and regeneration. The collection included 16 physical models and 3 digital models, many of which combined hand-crafted couture techniques with 3D-printed details and innovative sustainable materials such as a biodegradable fabric made of banana leaf blended, 3D printed fiber based on the shells of cocoa beans etc. [2].



Figure 1: Bella Hadid is dressed by Fabrican's Spray-on fabric during the Coperni fashion show in Paris, France, 2022



Figure 2: Clothes from Iris Van Herpen Couture Fall/Winter 2022-2023 fashion show as part of the Paris Haute Couture Week in Paris, France

In collaboration with scientists at the National Graphene Institute in Manchester, the fashion company CuteCircuit has created the world's first Haute Couture dress made of graphene (**figure 3**). The dress had graphene-enhanced stretch sensors that recorded the wearer's breathing pattern. The data was stored in a real-time database, and a powerful microprocessor analyzed the data and, depending on the depth of the breath taken by the wearer, changed the color of the LED decorations. For a shallow breath the LEDs changed from orange to green, for a deep breath they changed from purple to turquoise [3].

In 2021, British designer Gary James McQueen created the Guiding Light digital fashion show (**figure 4**) on a 3D computer graphics game engine Unreal Engine, which featured 20 menswear and womenswear ensembles. Each model can be viewed in a digital showroom and downloaded for fitting using augmented reality before the garment is physically created. Digital clothing can also be purchased

through DressX, the world's leading E-commerce platform solely for digital clothing where customers can upload photos of themselves and try on Gary James McQueen's latest design of their choice [4].



Figure 3: The World's first graphene black dress created by the fashion company CuteCircuit, United Kingdom, 2017

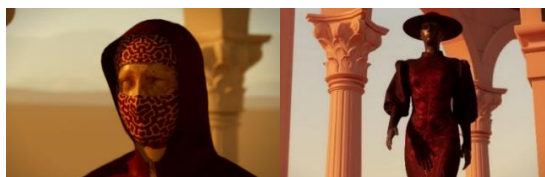


Figure 4: First digital fashion show by designer Gary James McQueen, United Kingdom, 2021

4. CONCLUSIONS

The most well-known and widespread ways of using smart technologies in clothing design are analyzed, such as: nanotextiles on the example of the Fabrican company, 3D printing in the work of designer Iris Van Herpen, built-in sensors in the CuteCircuit graphene dress, digital clothing of the McQueen brand. It has been found that digital clothing is the most promising, as it greatly simplifies and minimizes production costs, and also provides greater opportunities for the sale of clothing, however, at present, digital clothing needs more research and improvement.

5. References

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