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## Smart Textiles and Innovations in Healthcare and Business

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### Abstract

#### Background:

Today, the research community, the business community, institutions and the public sector come together to find the solutions of the future. The smart fabric market is gain popularity amongst all the sectors, especially the health sector. The Smart Textiles is offer a complete solution including everything from basic research to prototype development. It is the natural partner for realizing textile ideas or meeting a need with textile technology. It takes an open environment where people from many different backgrounds are allowed to meet and involve in open-ended communication to find both sought-after and unexpected solutions. The Smart fabrics also calls as electronic textiles or smart textiles. It is a digital enhanced fabrics that uses technologies: of light and battery to operate, to sense the environmental condition. They are work through the signals that are received from the central control unit. The electrical processor embedded in the fabric analysis and evaluates the signals. The entire functioning of the smart fabrics work with the help of nanotechnology.

The smart textiles are fabrics that have been developed with new technologies. They are provide added value to the wearer: communicate, transform, conduct energy and even grow. Smart textiles can be broken into two different categories: Aesthetic and Performance Enhancing. Aesthetic examples include everything from fabrics that light up to fabrics that can change color. These fabrics gather energy from the environment by harnessing vibrations, sound or heat, reacting to this input. There are fabrics that help regulate body temperature, reduce wind resistance and control muscle vibration – all of which help improve athletic performance. Other fabrics have been developed for protective clothing to guard against extreme environmental hazards like radiation and the effects of space travel. The health and beauty industry is also taking advantage of these innovations. They are range from drug-releasing medical textiles, to fabrics with moisturizer, perfume, and anti-aging properties.

The medical smart textiles serve the nursing homes, hospitals and other medical institutions. The smart fabrics products such as: smart medical gowns, smart pediatric wear, medical clothes, etc. Using the smart wearable garments, the problem of mobility or infrequent clinical visits can be solved out. These smart fabrics are the most useful sources to get accurate patient data through the senses embedded in them. After detailed R&D and analysis on nanotechnology and its integration with the non-woven fabric, numerous companies around the world have established themselves as the manufacturers of the

smart textiles for serving medical needs. The aim of the research is show the best startups developing smart textiles for healthcare.

#### Results:

1. The Grado Zero Espace is an Italian based company who is doing some amazing things with textile technology and product design.
2. The Ying Gao, a fashion designer based in Geneva is creating clothing that combines urban design, architecture and multimedia. He is use sensory technologies to make garments more interactive.
3. The CuteCircuit, a London based design duo is taking their smart textiles and technology to the runway. They are showed a collection at New York Fashion Week where the models controlled what their dresses looked like on the runway through their mobile phones.
4. The BioCouture is focused on bringing living and bio-based materials to fashion, sportswear and luxury brands. They are literally growing clothes from microorganisms like cellulose, fungi and algae.
5. The different startup companies serving the world with the smart textiles in health segment are Pireta, Stitch Institute, Clothing+, Hexoskin, Camria, 3Tecks etc.

#### Conclusions:

The textile industry innovations are improve people's everyday lives. It is provide benefit the health care sector, environment and business. Then there are performance enhancing smart textiles, which will have a huge impact on the athletic, extreme sports and military industries. The new researches and development are help the technology to develop. It implements effective way for the health industries worldwide.

The smart textiles in the health industry are helpful for monitoring ECG, heart rate, EMG and EEG. It is use for continuously monitoring the patient's condition and for receiving communication and positioning.

There are many countries who are not yet developed. They are need some really cost effective products for monitoring the patients in their healthcare industry. The smart textile fabrics are costly because of the cost incurred after the research and development of the technology and resources. If the costs are cut down, it will be easy to introduce the smart fabrics to the masses.

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