E-Textiles: Electronic Textiles 2016-2026

Description: We are in contact with textiles for more than 90% of our lives, and they are starting to become intelligent. The basis of this new functionality is the integration of textiles and electronics. From clothing to bandages, bed linen to industrial fabrics, new products integrating e-textiles are being created. The market has been slow to start due to many challenges, but with large companies investing heavily and releasing early products, we expect the growth to accelerate rapidly over the next decade.

In their purest form according to the definition, e-textiles based on the integration of inherently electrically or electronically active fibres have begun to see integration into early products. However, with many associated challenges around reliability, performance and comfort, there has been a strong push towards other solutions that can achieve better properties including washability, stretchability and new functionalities. The result is a complex ecosystem of different material, component and connection options that are now available for product designers.

The author has produced a comprehensive guide to all of the key techniques in use throughout industry and research today. Key advances in the last five years have led to early commercial products, with a market of around $100m in 2015. However, as larger names enter the space and returns on the significant investments made start to surface, the author forecasts that the market will reach over $3bn by 2026, with 'Sports & Fitness' and 'Medical & Healthcare' being the two largest sectors.

The report describes the full value chain, looking from the material and component options, to the manufacturing challenges, through to the applications, markets and key end users. Trends by market sector are crucial, as the addressable markets are both large and diverse. The report characterises key market sectors including 'Sports & Fitness', 'Medical & Healthcare', 'Wellness', 'Home & Lifestyle', 'Industrial, commercial, military', 'Fashion' and 'Others' (including automotive). For each, we report on progress amongst key players and projects, as well as outlining the unmet needs and growth potential of each.

Finally, the report looks further into the future, describing the cutting-edge of e-textile research. Componentry such as photovoltaics, supercapacitors, batteries and even memory are made directly as a fiber. Materials such as carbon nanotubes, inorganic nanorods and piezoelectrics are integrated within textile structures, introducing new properties. Systems combining the best in conventional electronics with flexible sensors and actuators via bespoke connectors enable new product options. Whilst some of these options remain further in the future, we report on key findings that will impact the industry in years to come.

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