



CONNECT

Smart textiles revolutionize medical treatment processes

Background

Medical technology is on a steady growth path, transforming trends from the leisure industry into essential, innovative and health-promoting approaches. Connexstyle represents a joint e-health research project between the Fraunhofer Institute, the Dutch company KnitwearLab, ItoM-Medical and POL-Studio, which is working on the development and application of a smart textile for the treatment of stroke patients or patients with neuronal disorders. The rehabilitation shirt measures vital data, evaluates them by means of an app, stimulates the brain and supports the formation of new neural pathways.

Fashionable IT piece or medical helper?

It has long been impossible to imagine everyday life without smart technical assistants, and smart tools are also becoming more and more established in medicine. Innovative trends such as smart patches and smart robotics are expected to optimize medical diagnostics, treatment, and monitoring in the future. A new research approach is now focusing on the development and approach of smart textiles, but what do we mean by this?

Smart textiles already exist in other sectors, such as the sports and electrical engineering industries. Based on integration technologies, garments with textile-integrated sensor technology are to be manufactured. The synergy of textiles and miniaturized technology is to be used in the future primarily in the treatment of neuronal disorders, such as after strokes. However, sensor- and actuator-supported clothing also includes memo functions that refine and support the grasping function in the case of motor disorders or lack of sensation in the upper body.

In terms of processing, a distinction is made between textile-integrated (electronic components are embroidered on) and textile-based (use of electronically conductive fibers and coatings as a basis) sensor technology. Both sensor technologies offer high skin tolerance, time savings in contrast to conventional measuring electrodes, and continuously record and store health data of the wearer, which contributes to permanent monitoring and can be sent directly to the doctor.

Connexstyle focuses on user-oriented rehabilitation garments designed to detect muscle activity and improve the rehabilitation process through a combination of Tex PCBs (textile printed circuit boards) and laminated electromyography sensors. The shirt is constructed based on a cotton shirt that contains sensor technology only in the inner sleeves. The individual parts are connected to



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each other through a small modular clip that sends vital data to the app via Bluetooth. This construction system allows the rehabilitation shirt to be taken apart and washed without any problems, so that a high level of hygiene can also be guaranteed. By linking it to the associated app, the recorded data is analyzed, visual brief reports on the treatment progress are created and thus enables doctors and therapists to determine follow-up measures for the patient in a targeted manner.

Are you interested in more information about smart textiles in medical technology? Feel free to contact us! We will put you in touch with the company.
 arco CONNECT: be smart, be connected - personally and directly.

COMPANY	LOCATION	WEBSITE	FIELD OF EXPERTISE
Connexstyle	The Netherlands	https://jessicasmarsch.com/Connexstyle	Smart textiles
KOB GmbH	Germany	https://www.kob.de/de/start	Smart textiles
AiQ Smart Clothing	Taiwan	http://www.aiqsmartclothing.com/	Smart textiles
Siren Care Inc	USA (CA)	https://siren.care/	Smart textiles
Sensoria Inc	USA (WA)	https://www.sensoriahealth.com/	Smart textiles
Carre Technologies Inc (Hexoskin)	Canada	https://www.hexoskin.com/	Smart textiles
Chronolife SAS	France	https://www.chronolife.net/	Smart textiles
Healthwatch Ltd	Israel	https://healthwatchtech.com/	Smart textiles
Skiin	Canada	https://skiin.com/	Smart textiles
Smartex Srl	Italy	http://www.smartex.it/en/	Smart textiles

We would be happy to put you in direct and personal contact with experts in the field of Smart Textiles. Promising research approaches, renowned SMEs and actively promoting the future of medical technology - years of industry knowledge and a strong vision - discover some national and international opinion leaders in the field of smart medical textiles below:



INDUSTRY EXPERT	JOB POSITION	FIELD OF EXPERTISE
Dipl.-Ing. Christoph Riethmüller	Head of Technology Center Smart Living Textiles Den- kendorf Future Workshop	Smart textiles
Andreas Lymberis	Research & Innovation Pro- gram Officer at the Euro- pean Commission	Wearables & smart textiles
Ramses Martinez	Director of the FlexiLab Research Group in the De- partment of Biomedical Engineering at Purdue University	Smart materials