



STRETCHABLE ELECTRONICS ENABLING **Tumescence Measuring Wearable Patch**

INTRODUCTION

Impotence, or male erectile dysfunction (ED), is defined as the inability to get and keep an erection adequate for the performance of sexual intercourse. Worldwide, around 50% of all men above the age of 50 years old suffer from ED.

Our in-house developed smart patch enables a continuous quality assessment of the rigidity and/or tumescence of a penis during a penile tumescent event. The device would assist in first instance people who have continuous or intermittent inability to achieve or maintain an erection for satisfactory sexual penetration, and thus having an ED.

STATE-OF-THE-ART

Nowadays a few measurement techniques exist to monitor ED. This is done either by subjective questionnaires. As a 'wearable' device the Rigiscan® is best known. Although it is the first real non-invasive and standardized tool to evaluate erectile function in males, up till now, it is rarely used in practice due to a variety of issues: painful cyclic contraction of the loops, disconnection of the loops, blockage of the engine inside, low quality sleep (REM), ... resulting in low quality measurements.

TECHNOLOGY

Our proposed smart patch is a joint development of researchers at the institute for material sciences of Hasselt University (IMO-IMOMEC) and the Limburg Clinical Research Center (LCRC), a structural collaboration between Hasselt University, Jessa Hospital (Hasselt) and Ziekenhuis Oost-Limburg (ZOL, Genk). Using an in-house developed flexible and stretchable strain gauge, both the tumescence and rigidity of the penis can be continuously monitored, generating reliable data. The silicon based sensor is user-friendly and easy to use and tackles the current conventional problems of existing methods to assess ED. By the use of state-of-the-art communication technology, the urologist has quick access to the obtained data.

IMO-IMOMEC



Limburg Clinical Research Center



OUR RESEARCH AND DEVELOPMENT

The technology readiness level of the smart patch is currently at TRL 4, meaning that researchers have experimental proof of the technology validated in a lab setting. First, individual silicone based strain gauges were tested and calibrated in the lab to investigate patch properties like elasticity, gauge factor, sensitivity, etc. Next, a combination of two silicone strain gauges are used to assess the rigidity and tumescence on an artificial penis. The rigidity and tumescence of the artificial penis can be altered using hydrostatic pressure. These measurements are used to assess the most appropriate form factor of the patch, thickness and other material properties next to its influences on sensitivity, reproducibility, interpatch variability etc. The silicone based sensors are developed in a parallel project and not part of this technology offer.

Currently, preparations are ongoing for the first pilot study at the urologist practice where under controlled conditions the smart patches will be validated on real live persons. The results of these tests will be used to prepare for a bigger clinical validation to further validate and explore the possibilities of the patches and its technology.

OUR UNIQUE OFFER FOR YOU

We are looking for strategic partners to move forward with the translation of this technology to the market. By utilizing your experience and expertise in your sector, we would like to explore with you what impact our activities

could have on your business case or application. In this way we would like to identify how an adaptation of our approach could affect: customer attractiveness and market share, internal processing operations or supply chain processes. Essentially, we want to know how our patent-pending technology and approach for collecting and collating data regarding smart patches for ED monitoring could help you increase your revenues. As we are keen to talk with you please don't hesitate to contact us using the details below.

Patent application available for licensing:
WO2021032879 A1.

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