# Thermal Conductive Textile
# 導電發熱織物

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The aim of this project is to use wearable electronic technology to develop a novel thermal textile in which the function of temperature control is applicable to both general and medical apparel.

The formation of the novel conductive fabric is achieved by using a combination of textile-based technologies to knit together conductive fibres. The theoretical basis for this process is provided by the resistive network model in which properties of sheet resistance, length resistance and contact resistance provide various fabric structure and density.

本項目運用可穿戴電子服裝技術開發新型的發熱織物和相關織造技術，以應用於保暖及醫療領域。

研發透過導電紗線電阻在織物中發熱的方法，選用特種導電纖維，通過針織織造方法，將纖維和導電纖維加工、定型，在不同織物結構和密度及接觸電阻和長度電阻理論基礎上，製造創新的發熱面料。

## Application 應用

The thermal conductive textile has a wide range of applications including:

- Outdoor apparel products;
- Home thermal products;
- Healthcare and medical treatments;
- Other potential areas where soft thermal comfort is required.

導電發熱織物應用廣泛，包括：

- 戶外服裝產品；
- 家居床上用品；
- 醫療保健用品；
- 需要提供柔性熱源的潛在應用領域。

## Industry Benefits 業界效益

- A theoretical foundation for the feasibility of designing wearable electronic fabrics which possess thermal conductivity; and
- Enhanced product design due to the conductive paths and heating areas requiring no external modification such as sewing.

- 有可行性理論依據來設計電子織物；
- 導電路徑和熱區域可被製成不需縫紉等外部修改的織物，設計產品可達到更高的美感要求。

## Technological Breakthrough 技術突破

A complete design approach was employed to make the soft textile thermal circuit more aesthetically pleasing and lighter. The design achieves target resistance through the interconnection and arrangement of conductive paths and inner conductive yarns. This arrangement strengthens the aesthetic expression of the visible circuit, making it a design feature offering comfort and convenience.

此項技術建立了一套完整的設計方法，使得柔性發熱紡織物更加美觀輕便。通過對導電路徑和織物內部導電線連接方式的設計，使織物達到目標發熱電阻，從而使原本可見的導電迴路變為一種更加美觀的表達方式，同時更加舒適輕便。

## Licensing Details 獲取專利

A non-exclusive licence covers the knowhow of fabricating a sweater with thermal heating structures.

非獨家專利授權採用發熱結構織造毛衣技術。

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