

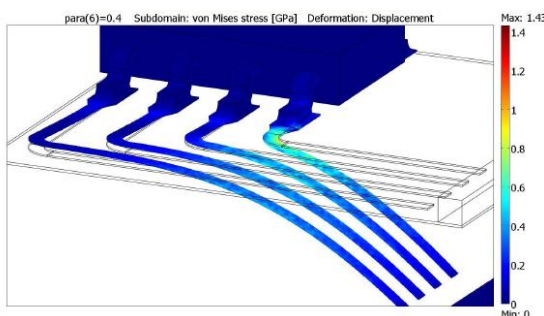
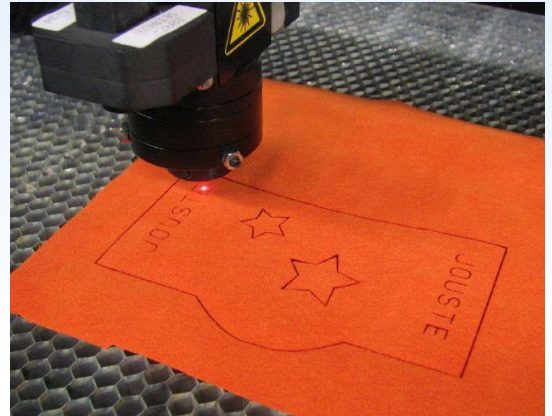
Flexible Electronics (JOUSTE)

In Kankaanpää unit the project emphasis is on the designing, protection and encapsulation of flexible electronics. The aim is to encapsulate electronics with textiles and elastomer materials and study textile materials potential to protect electronics. The main idea is to find new technologies to cut and weld textile materials and also find new way to integrate electronics into textiles. The research is carried out by the TUT Kankaanpää Unit and the TUT Pori Unit between 1.11.2006 –31.12.2007. The project is funded by TEKES (Finnish Funding Agency for Technology and Innovation), Clothing Plus Oy, Hexamer Oy, Ama-Prom Oy and Teknikum Oy.

Flexible electronics can be manufactured with elastomeric encapsulation and textile surface. Soft textile surface has many advantages such as comfort when compared to the hard plastic cover of electronic devices. The most important characteristic is that elastomer encapsulated electronics is easier to integrate in to the garment and new design effects can be used.

In the first part of the project, Design of Flexible Electronics, first objective was to find out existing design rules for flexible electronics and to do research on material selection. Encapsulation of flexible electronics is necessary in wearable electronics. The purpose of the coating materials is to improve the mechanical properties and to protect the electronics. Elastomeric materials and their suitability for encapsulation were researched in the second part of the project. The conclusion was that, elastomeric encapsulation and textile cover and right design gives electronics new soft feeling and good protection.

The third part of this project was to encapsulate flexible electronics with textiles using new kind of sealing and cutting technologies. As well as find textiles which can be protective and are durable. The main interest was the possibility to use laser or ultrasound technologies with textiles. To meet the requirements, different welding and cutting methods were studied and compared. Laser cutting of textiles is a fast, accurate and it produces well finished edges especially with synthetic materials.



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