Technology Offer

Stretch and Stretch-Rigid PCB Technology

The current printed circuit boards are not bendable and not stretchable. Flexible circuit boards are only bendable. With stretchable PCB technology the "board" is both stretchable and bendable.
From a variety of the techniques Q.P.I. Group chose the SCB (stretchable copper board) technique. This technique makes use of the classical processes for electronics production: laminate manufacture, printed circuit board production and assembly. A polyurethane base was chosen for the laminate. An attractive added advantage is that an industrial manufacturing process for stretchable printed circuit boards can be realised with relatively low investment needed. The assembly of components on the substrate is also an important area of attention. Options include the local reinforcement of the substrate with a coating or the use of an interposer. Alternative is the application of stretch-rigid technology; the active components are placed on a rigid PCB, interconnection between the various rigid PCBs is with a stretchable substrate.

Q.P.I. Group B.V.

The Q.P.I. group develops and supplies advanced Printed Circuit Boards (PCBs) for numerous applications and market sectors. Q.P.I. is a specialised one-stop-shop, from the customer's first idea for a product right through to the (series) production of the final PCBs. In addition, customers can come to Q.P.I. for any stage of the product creation chain, such as making the PCB lay-out, ordering existing PCBs, having prototypes mounted by hand and all other activities involved in the development process. For its own use and the use of third parties, Q.P.I. has a well-equipped laboratory for carrying out all the relevant PCB tests.

Benefits

- The board is stretchable; variable length or angle, easy change of position possible
- Elongation is up to 30%
- Complicated movements possible, stretch, bending and twisting
- Very low stiffness, mechanical decoupling

Possible applications

- Functional clothing
- Medical applications
- Intelligent bandage
- Complicated positioning of eg. sensors
- Complicated shapes
- Three dimensional car interior parts
- Overcome of tolerances in constructions

Contact information

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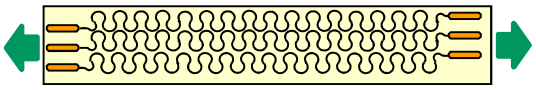
Basic stretching concept

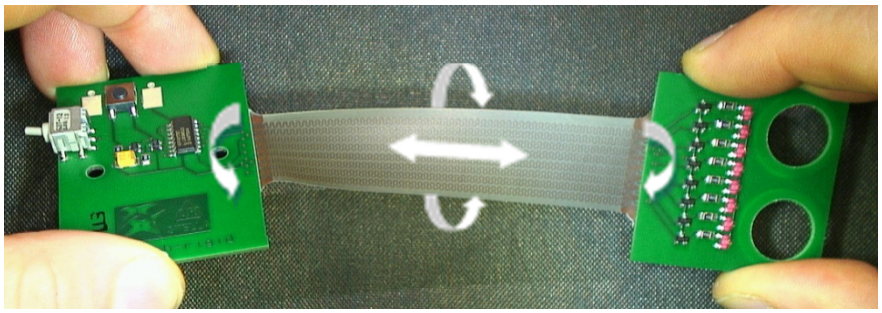
SCB technology makes use of copper wires. To overcome the ductility of copper, the copper should be structured in a special way. Horseshoe like patterns are favored to overcome the limited ductility of copper. For detailed design suggestions and product specifications contact Q.P.I. Group.



Options for cooperation

- Production based on customer specification
- Design of the component
- Complete co-development of the application

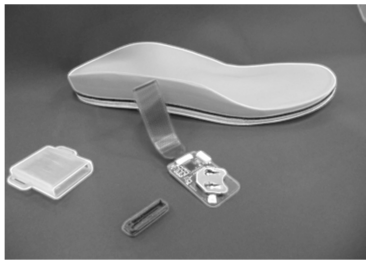
Some application samples made with SCB technology



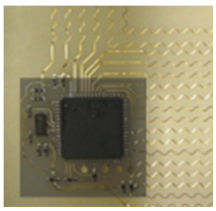
Stretch-Rigid PCB

Degrees of freedom:
Stretch + Rotate + Twist

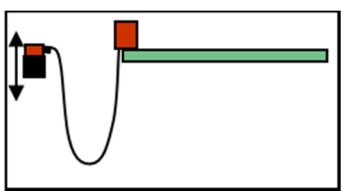
Sample of in shoe sole
Stretch PCB, measuring pressure with pressure point sensors and collects data in time. Free movement of the sensor.
Also one size fits all, due to the flexibility of the material the pressure sensors can easily positioned in the shoe sole.



Bandage with build in electronics, to measure the tightness of the applied bandage. Optional the information can be exchanged using GSM transmission.



Interposer contains the active electronics.
Dark area on the picture.



← Polyimide interconnect
Long length, high volume to enable free movement of actuator

Polyurethane interconnect →
Short length, low volume needed for free movement of the actuator