



- Article title: Sensor and Electronic Circuits Development on Flexible Substrates through Additive Manufacturing Technologies for Textile Applications
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- Focus in printed electronics on textiles substrates and electronic developments.



Textile Research Institute (AITEX)

- AITEX is a private research institute. 260 employees
- More that 1200 textile companies associated
- Services grouped in main fields of activity
 - R&D projects to develop products or improve production
 - Laboratories and certification for quality controls according regulatory and international standards
 - Technical training for employees in technologies and textile processes
- R&D groups:
 - Smart Textiles and ICT solutions
 - Technical fibers
 - Materials
 - Technical finishes
 - Innovation in design and fashion
- Project experience
 - H2020, Erasmus+, Eureka, Leonardo, Life, ...



Introduction

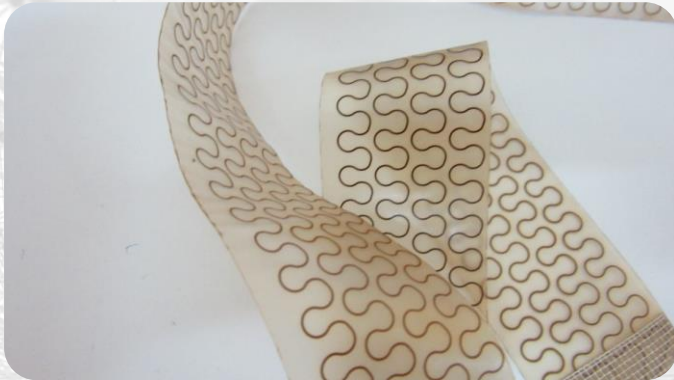


- Smart textiles have attracted the attention of the scientific community in the last years
- Fabrics that can sense or react to the external environment, producing a designed and useful response
- Smart textile make use of the electrical properties of the involved textile substrates
- This year AITEX is working in HYBRID project. A regional project focused on printed solutions as tracks, sensors, electrodes combined with traditional silicon components
- This project is funding by the Conselleria d'Economia Sostenible, Sectors Productius i Treball, through IVACE (Instituto Valenciano de Competitividad Empresarial). No.: IMAMCI/2020/1

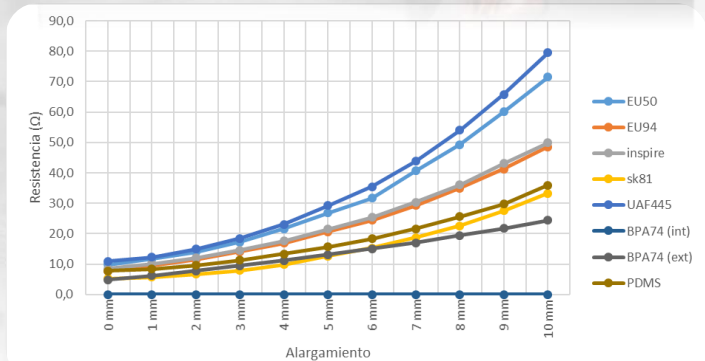


Stretchability

- Stretchable solutions (meander)

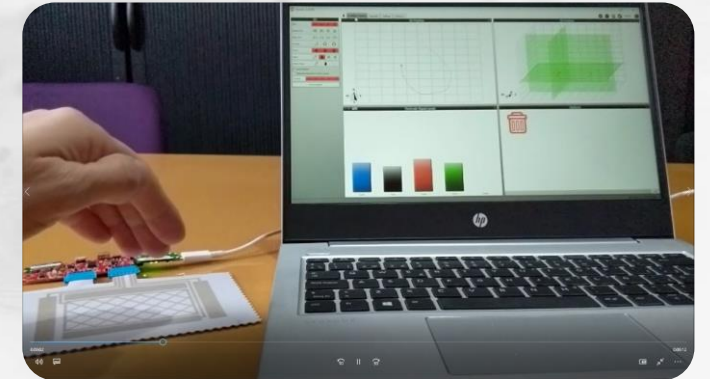
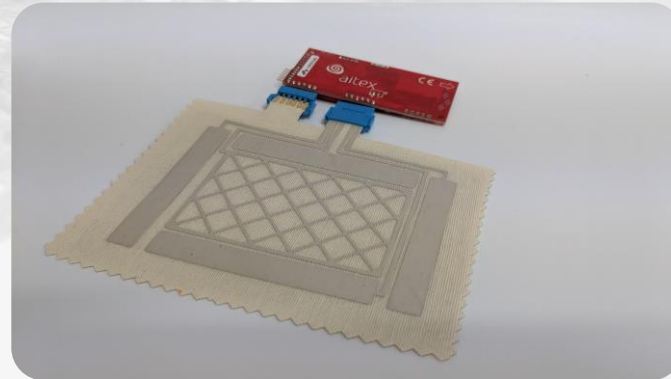
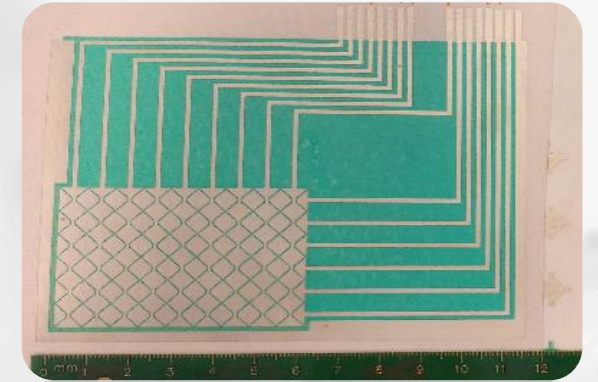
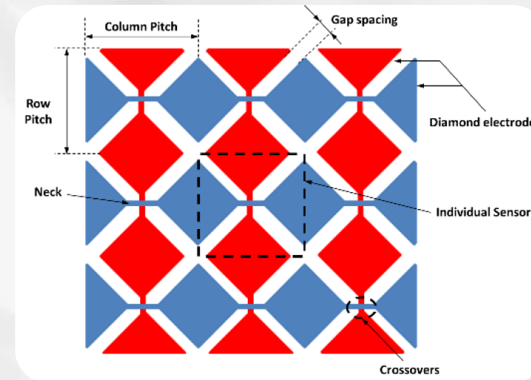


- Different brands support stretchable inks
- Their behaviour depends on the substrate
- Conductivity variations measured
- Use durability



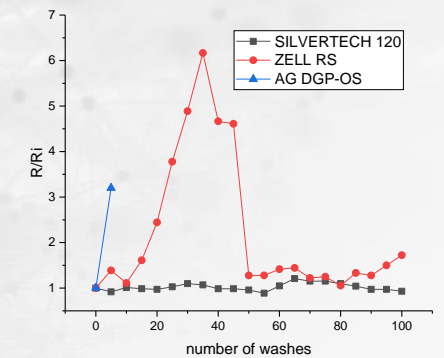
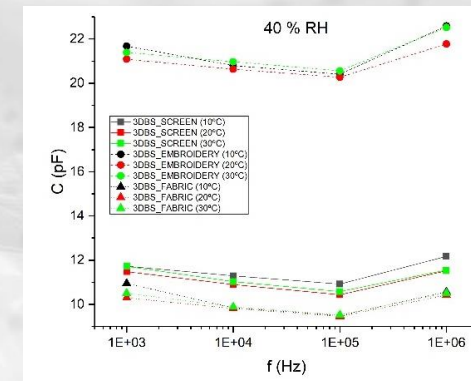
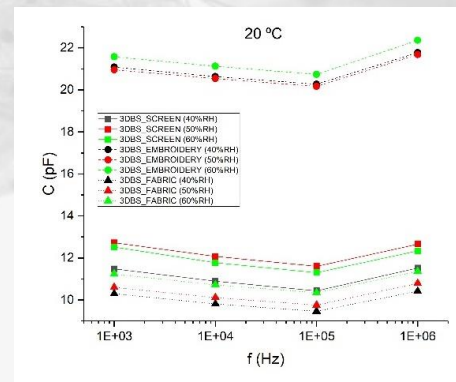
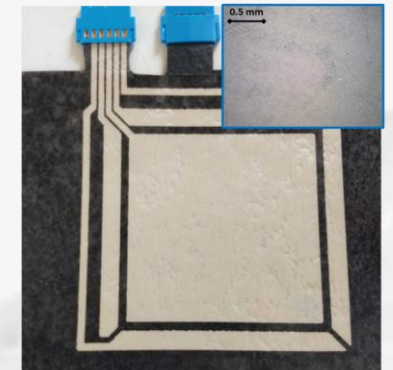
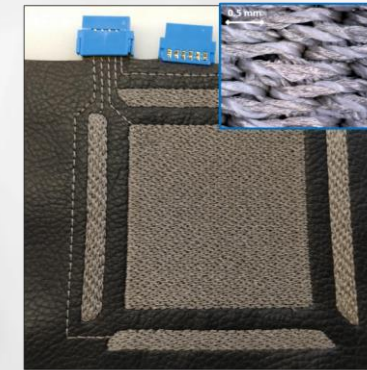
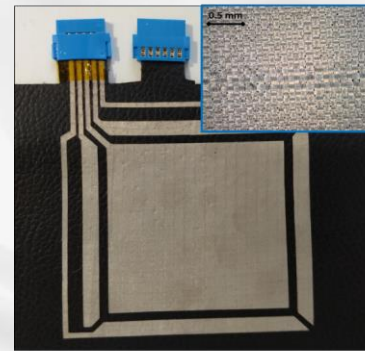
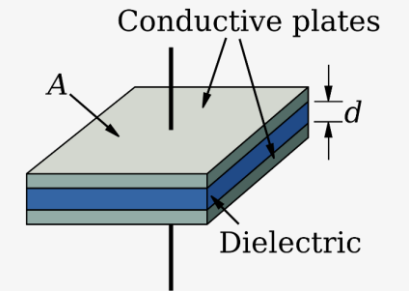
Gesture detection

- Arrays of capacitive sensors:
 - Touchpad
 - Humidity sensors
 - Movement Sensors



Durability challenges

- Capacitive Sensors
- Touchless interface application
- Different technologies:
 - Printed
 - Embroidered
 - Laminated
- Evaluation
 - Humidity variations
 - Temperature variations
 - Washing cycles





THANK YOU

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