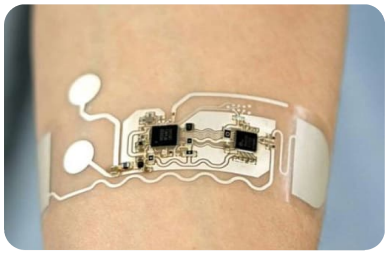
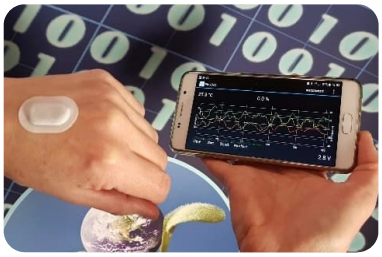
Selected demonstrators made at VTT

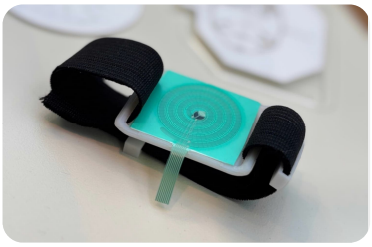
ECG smart patch with external reader and magnetic snap connectors



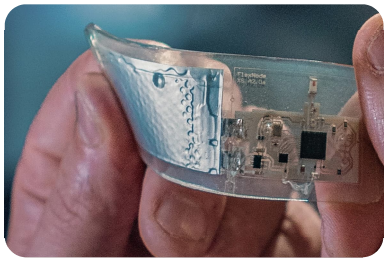
Wearable health monitoring sensors



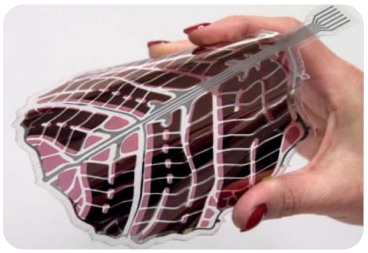
Smart sensor patches



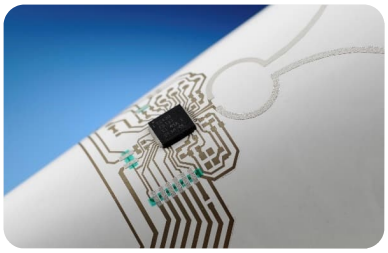
Electrochemical sweat sensors



In-mould stretchable sensor node

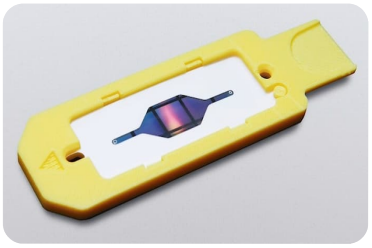


Leaf shape flexible OPV module



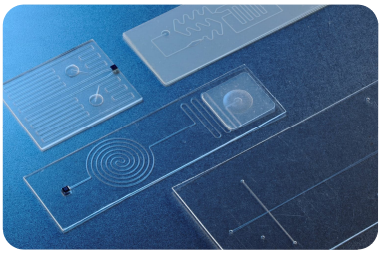
Sustainable electronics on paper

Printed low-cost indicators

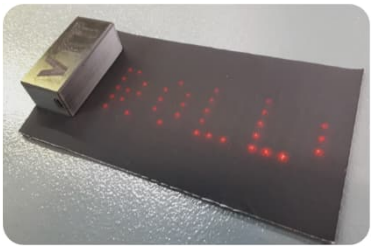


Ultrasensitive Plasmonic Lab-on-Chip devices

Roll-to-Roll PDMS-paper microfluidics



Opto-fluidic sensor with light source



Textile integrated LED displays

In-mould display with RGB LED's

R2R processed OPV foil

Roll-to-roll microfluidics and optical readers for next-gen diagnostics

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R2R facilities

R2R PRINTING LINE

- 4 interchangeable printing unit slots
- Available deposition units: forward and reverse gravure, rotary silk screen, flexography and slot die coating
- Plasma substrate treatment unit
- Lamination unit, R2R hot embossing unit, Die cutting unit
- Drying units (air, UV)
- Automatic registration system
- Max. web width 300 mm, Max. web velocity 30 m/min

R2R CONVERTING LINE

- 6 interchangeable converting unit slots
  - Die- and kiss cutting (top and bottom), lamination, slitting
- CO_2 laser
- 2 industrial robot arms synchronized with the converting line and laser
- Automatic registration system for lamination
- Max. web width 300 mm
- Max. web velocity 90 m/min

R2R TESTING MACHINE

- 400 configurable test points
- Maximum test fixture size 408 mm x 290 mm
- Automated test fixture alignment
- In-house test fixture design and assembly
- Different measurement possibilities between test points
  - Open and short circuit testing, LCR measurements, current and voltage measurements, OPV characterization (IV-curve), LED and OLED functionality testing
- On-the-fly test results storage on a data base
- Systematic quantification of quality, yield and tolerances throughout the roll at industry-relevant volumes

DIANE DIAGNOSTICS PILOT LINE

- Development and pilot manufacturing of next generation point-of-care diagnostics
- Clean room with controlled environmental conditions: temperature +22°C ± 2°C and humidity 20 RH% ± 5 RH%

R2R HYBRID ASSEMBLY LINE

- Automated hybrid integration line for flexible, stretchable and bio-based continuous substrates
- Stop-and-go operation mode
- All process steps on the same run
  - Conductive adhesive (ICA) dispensing for electrical bonding
  - Pick-and-place of SMD components from tapes and reels
  - Heat-curing in a reflow oven
  - Non-conductive adhesive dispensing for encapsulation, side-bonding, underfill and coating
  - UV-curing unit (top and bottom side irradiation
- Working area 400-500 mm x 290 mm (MD x TD) in each process equipment

EVO R2R ASSEMBLY LINE

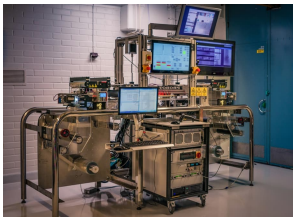
- Suits for assembling flexible, silicon and SMD components on printed backplane with individual process parameters for each interconnect
- Die attach, flip chip, multichip: chip-size down-to 100 µm and up-to 100 mm
- Adhesives dispensing & stamping (ICA, ACA, NCA), flux dipping
- Adhesive curing by thermo-compression and UV-curing
- Highest accuracy ± 10 µm @ 3 Sigma

ENKELI INJECTION MOLDING MACHINE

- 2 injection units: ø30 mm and ø40 mm screws
- Clamping force 120 tn
- 2-shot moulding capability with rotation plate of 700 mm
- Wide range of thermoplastics including special high-temperature grades
- Foil integration options: In-Mould-Labeling (IML) and In-Mould-Decoration (IMD)
- R2R feeder included

R2R SILICONE ELASTOMER PROCESSING

- 2 component silicone elastomer (“PDMS”) replication
- Wet deposition, layer thicknesses tens to hundreds of µm
- Up to 300mm web widths



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