

FLEXIBLE, STRETCHABLE AND BENDING
SLACKNESS:
STRETCH.FLEX SAMPLE WE.BAND!

Ann-Kathrin Kächele

WÜRTH ELEKTRONIK MORE THAN YOU EXPECT

REFERENT

Ann-Kathrin Kächele

Technical Project Manager - Advanced Solution Center

- Project Manager STRETCH.flex
- Sales support for technology and special requests
- Internal projects to further develop technology

With Würth Electronics CBT since 2016

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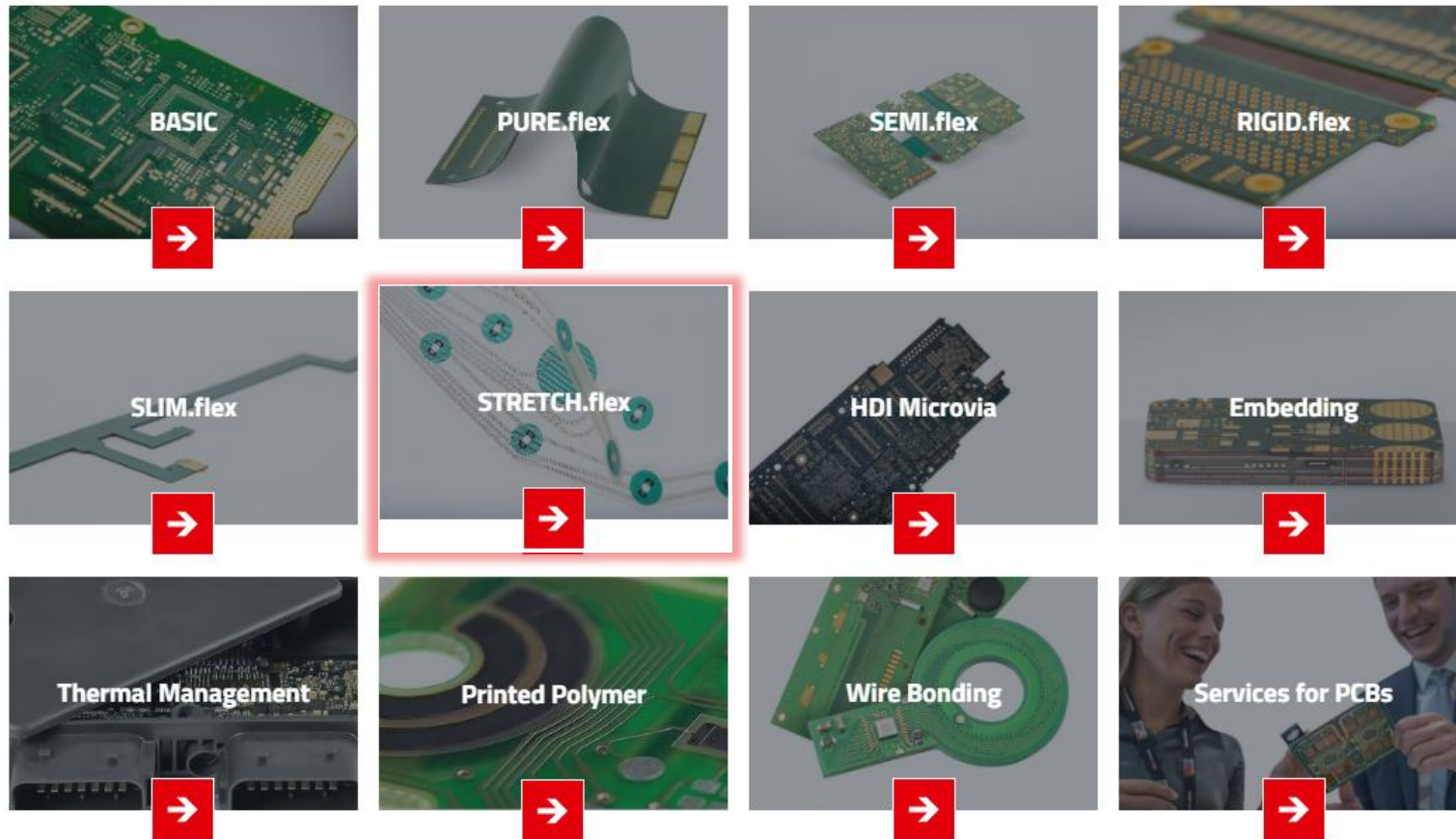
AGENDA

1. Homepage
 - general: <https://www.we-online.com>
 - Directly to WE PCB-Technologies <https://www.we-online.com/pcb>
2. STRETCH.flex
 - Manufacturing concept
 - Advantages with the technology
3. Sample WE.Band
 - Design possibilities of the sample
4. Applications STRETCH.flex

HOMEPAGE

Technology Diversity

Are You Looking for a PCB Solution? We'll Find It!



<https://www.we-online.com/pcb>

STRETCH.FLEX

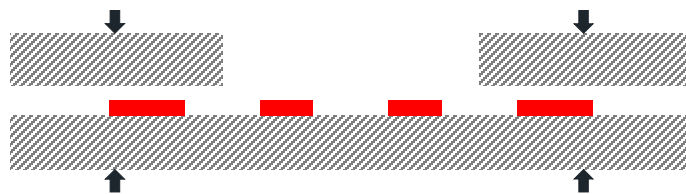
Manufacturing concept – single-sided (1S) and double-sided (2S) stretchable printed circuit board



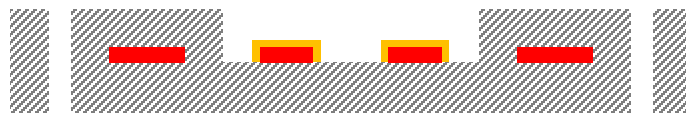
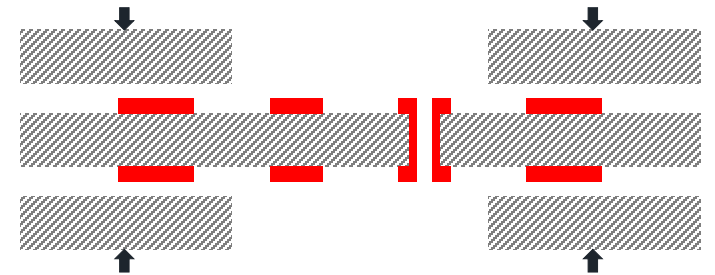
Copper clad
TPU



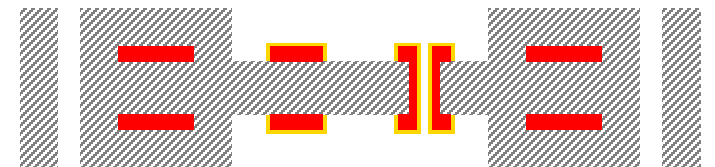
structuring of Copper
and if necessary drilling of vias



lamination of
pre-structured TPU



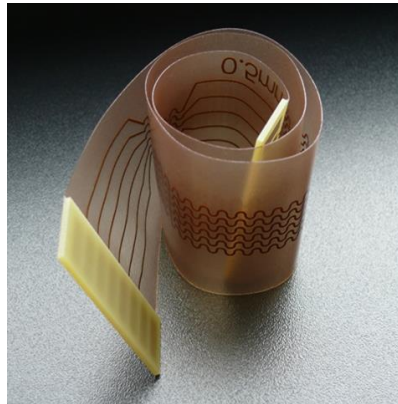
solder surface and
final routing



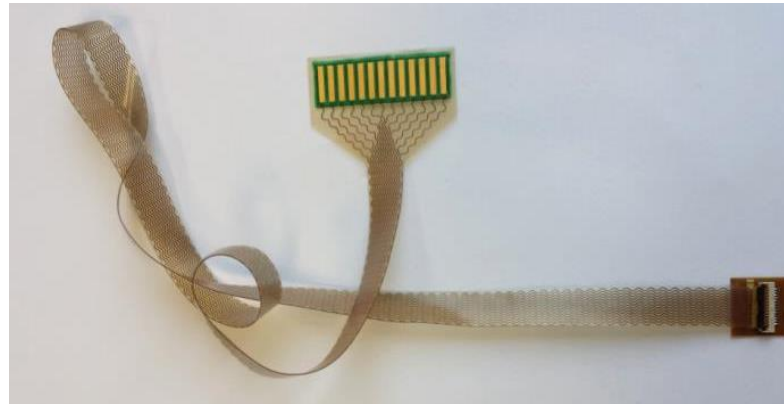
STRETCH.FLEX

Your advantages

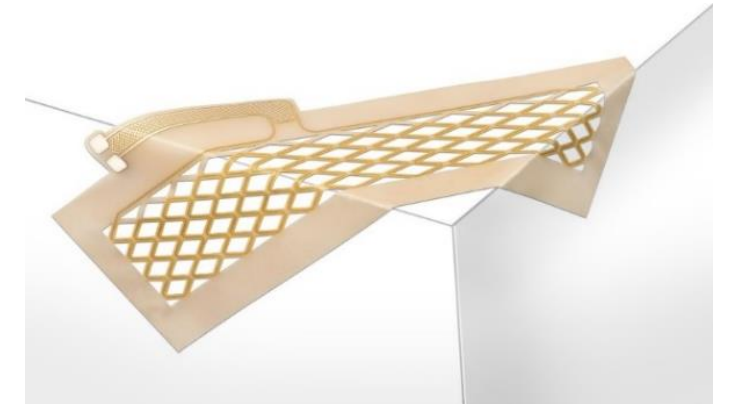
- Wide property profile of TPU
- Very adaptable material – almost every shape is realizable
- Multiple rotation without influence on stability and electrical properties
- Producable with FR4 Stiffener



FR4 Stiffener



Multiple rotation ($n \times 180^\circ$)

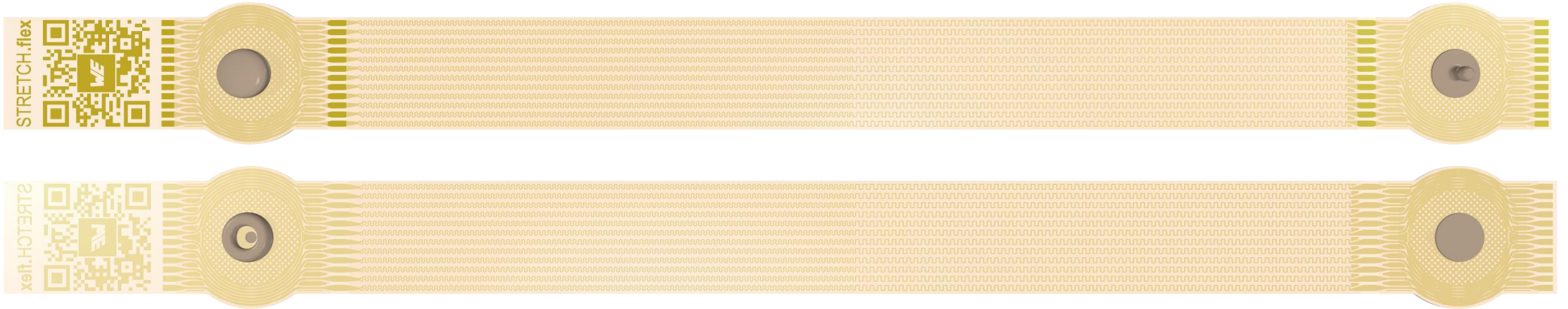


Adaptable material

The material and advantages are aimed at applications in

- Medical Technology
- Sensor Technology
- Smart Textiles
- (Soft) Robotics
- Internet of Things (IoT)
- and in your business

SAMPLE STRETCH.FLEX

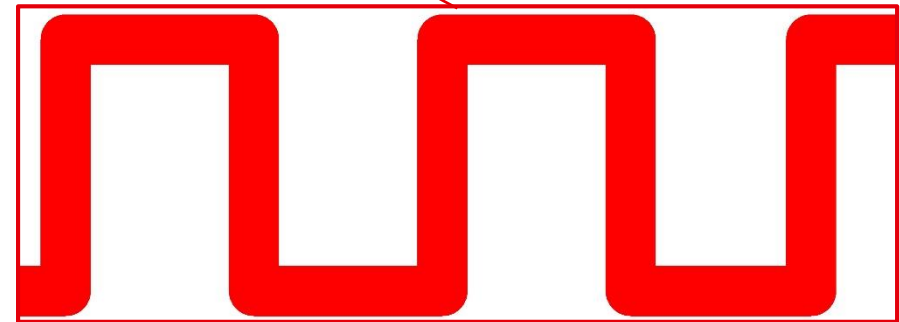
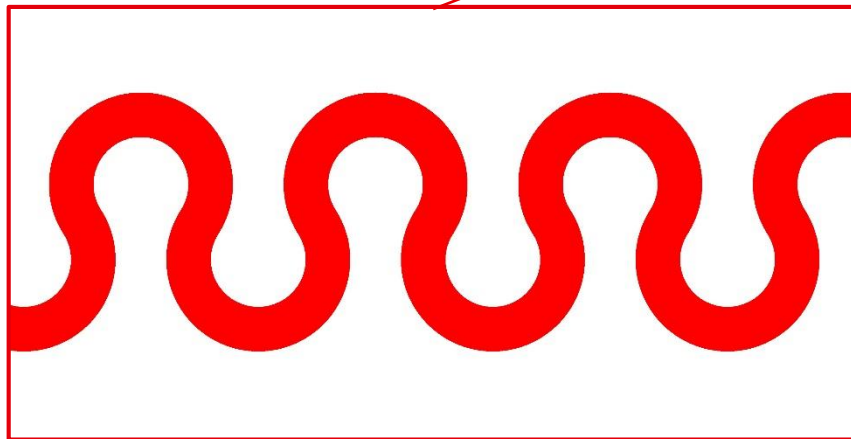
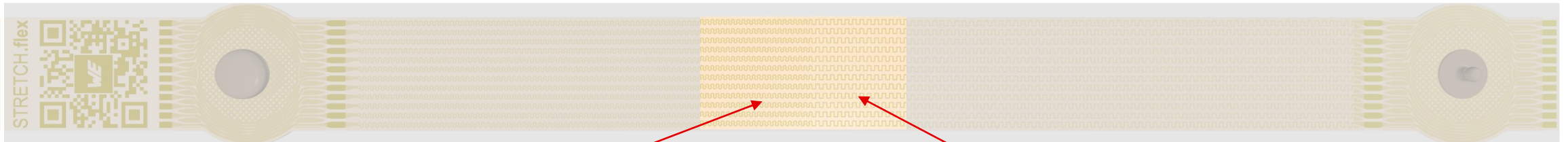


Different design possibilities combined in
one sample



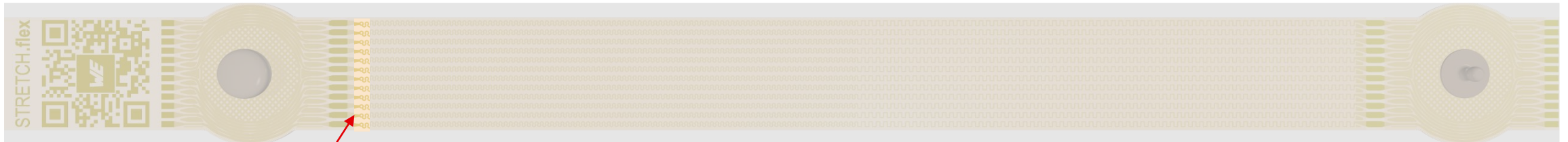
DESIGN POSSIBILITIES OF THE HAND SAMPLE

Different meander structures



DESIGN POSSIBILITIES OF THE HAND SAMPLE

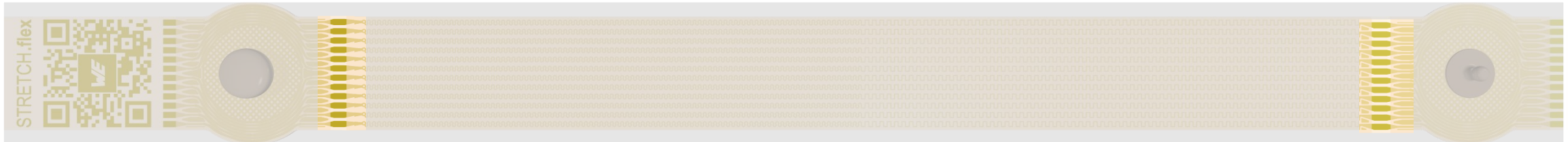
Connection of horseshoe copper tracks



- Fragile area is between the trace and the copper pads
- Elongation- cycles are increased by "donut structure"
- Not a must!

DESIGN POSSIBILITIES OF THE HAND SAMPLE

Teardrops of copper pads



- Realized in transition area between rigid and stretch
- Cracking, which occurs due to stretching, is reduced

DESIGN POSSIBILITIES OF THE HAND SAMPLE

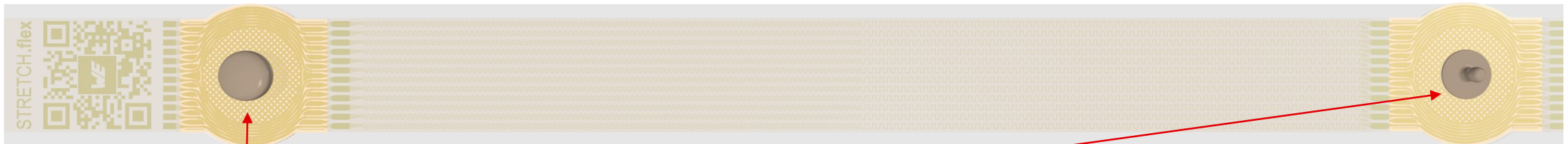
Additional copper structures



- Reinforcement in the transition area between stretchable and stiff part
- Different structures possible
- Distance between reinforcement and layout must be min. 100 μm

DESIGN POSSIBILITIES OF THE HAND SAMPLE

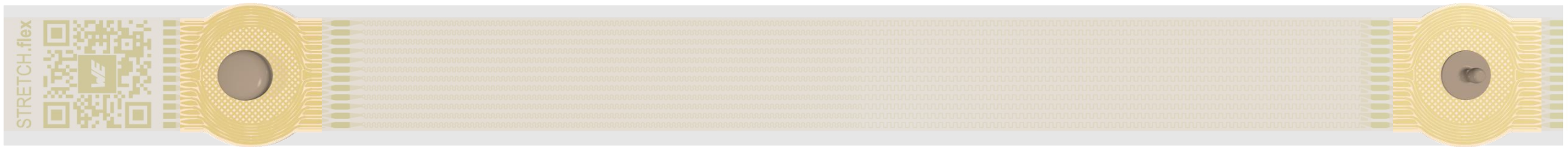
Stabilization structure



- Stabilization structure around the buttons
- Partial reinforcement in areas that should not be stretched
- Ideal also for the area of the components

DESIGN POSSIBILITIES OF THE HAND SAMPLE

Push buttons



- Push buttons to close WEBand
- Attached with the help of push button pliers
- Other attachment options e.g. with conductive glue to realize required function

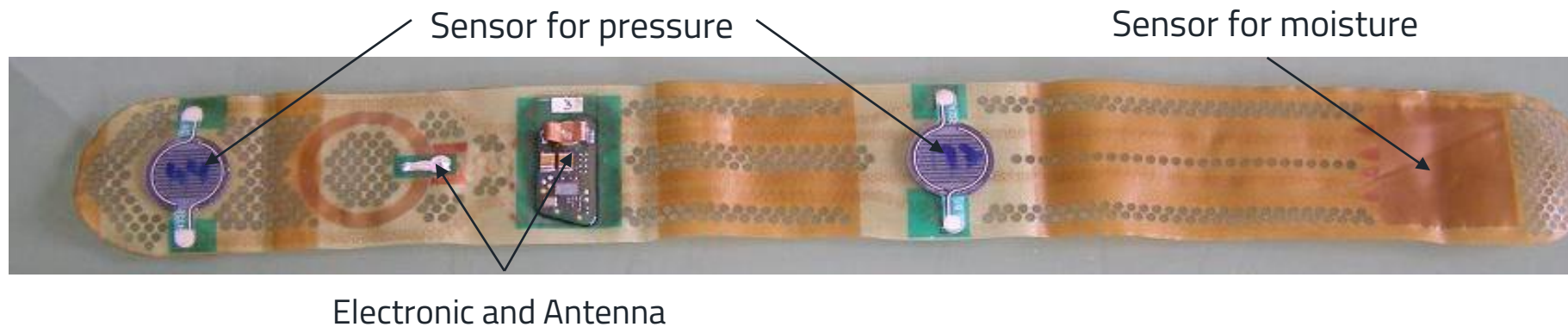


APPLICATIONS STRETCH.FLEX

Medical Technology

Medical Bandage

- Measurement of pressure, temperature and moisture for wounds that are difficult to heal
- Data storage on RFID enables reading of data
- Adapts to the body due to TPU material

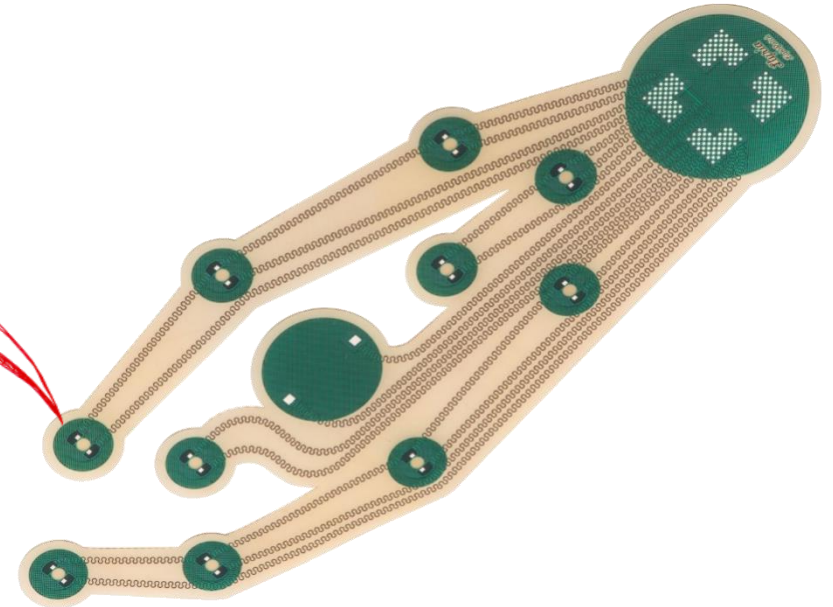
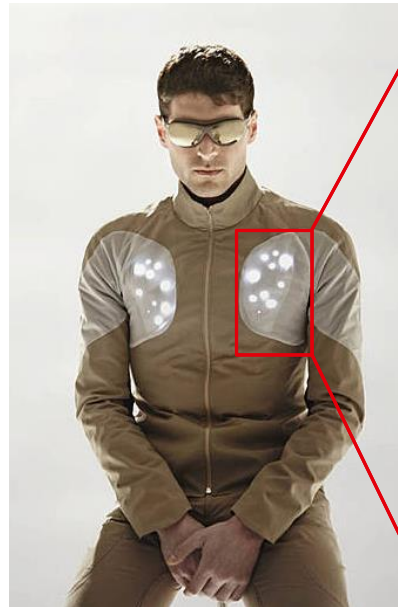


APPLICATIONS STRETCH.FLEX

Smart Textiles / Wearable Technology

Fraunhofer IZM and Designer Wolfgang Langeder (Utope Co.) / Cycling Jacket „Sporty Supaheroe“

- Integrated and active sensor-controlled LEDs for an interactive safety lighting
- Red Dot Design Award „Design Concept“



YOUR PERSONAL HAND SAMPLE

Interested in a WE.Band hand sample?



Scan the QR code or visit our website:

<https://www.we-online.com/en/products/printed-circuit-boards/flex-solutions/stretchflex/stretchflex-hand-sample>

THANK YOU VERY MUCH FOR YOUR ATTENTION!

Which application do you have?
How can WE support you?

Contact:

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Team STRETCH.flex

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