

**Projekttitle:** Reproducibility and quality assurance in the production of near-net-shape, precision-fit compression knitted fabrics on the heat-setting machine (Short title: Qualifix)

**Partner:** Penn Textile Solutions GmbH, Paderborn

**Duration:** „04/2020 – 03/2022“

**Funding** „Zentrales Innovationsprogramm Mittelstand - ZIM“

**Agency:** des BMWi

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### Mission Statement

Stenter frames are the most commonly used equipment for heat-setting textiles (e.g. for drying and stabilising technical textiles or clothing fabrics). Homogeneous mass products are currently heat-set on stenter frames. The process is largely adjusted on the basis of experience and is complicated by numerous influencing variables and natural fluctuations. The current trend in the sportswear industry is towards products with different compression behaviour. However, the uniform heat-setting of products with variable stretch behaviour across the width is currently not possible on stenter frames. The aim of Qualifix is to produce thermofixed products with variable compression zones across the fabric width.

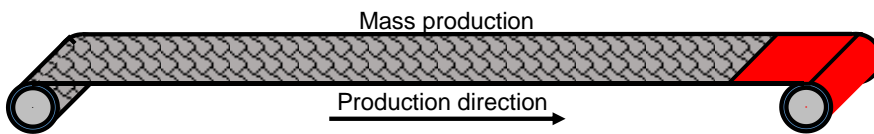
### Approach:

In order to increase the reproducibility of the process and the targeted products, quality-relevant parameters are recorded online and dependencies on the setting parameters of the stenter frame and the influencing variables of the raw material are investigated. From these results, a model of the stenter frame is developed, on which an adjustment aid for the required products with variable compression zones is based.

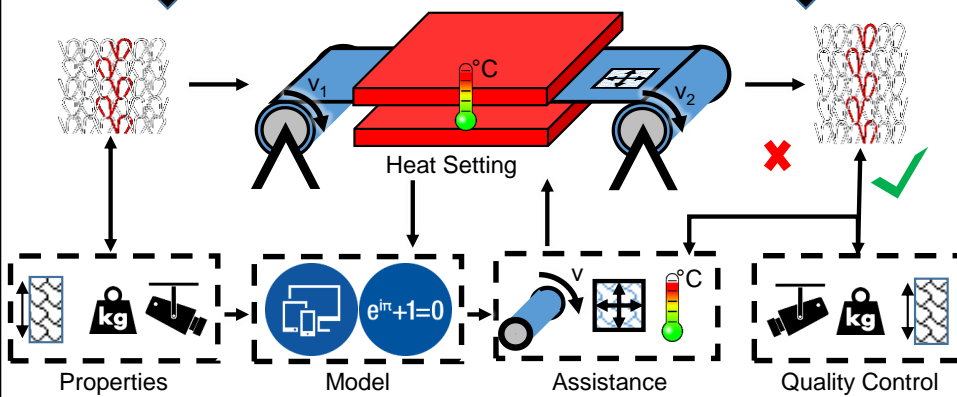
### State of the art & problem definition

- Production of mass-produced goods with homogeneous product characteristics
- Parameter setting on the stenter frame is based on experience
- Rejects or 2nd choice products in the setting and development process
- Inaccurate basis weight measurements lead to errors in product setting

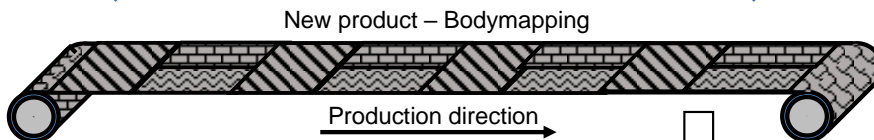
✗  
Reject goods



### Approach & Development

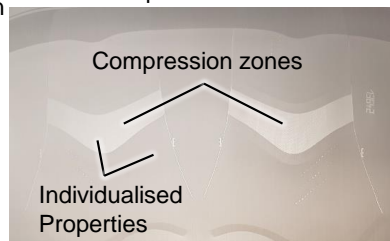


### Aim & benefit



- Dimensionally stable products with variable properties and compression zones
- Basis weight measurement and data acquisition system
- Model-based adjustment of the system
- Technological leap and new sales markets  
Increase in turnover by 30 %
- Reduction of rejects for new developments:  
Savings of 220,000 €/a
- Quality improvement: reduction of the tolerance field width by 50 %

Thermofixiertes Produkte vom Spannrahmen



### Acknowledgement

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