Digital transformation along the textile value chain

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What you might be thinking of ...
But you may not be thinking about…
And you may not be thinking about...
10% ... of all materials are fibre-based
Digital Capability Center
Aachen
Digital Capability Center Aachen

Where do I get data from?
Accelerator for digital production

Lean State ➔ Future State

What is “Industry 4.0”?
Model factory Industry 4.0

How to generate benefits from data?
Training- & Qualification Center

Lean State ➔ Future State

Model factory Industry 4.0

Training- & Qualification Center
THE PRODUCT

A SMART WRISTBAND

Narrow fabric
Customized Design
Batch size 1
Individual Log in
Production line at the DCC

1. Warping
2. Weaving
3. Heat set | Coating
4. Printing | Cutting
5. Assembly
6. Testing

- No digital integration of laboratory results
- Quality control at the end of the production line
- Failures when entering test parameters
- Time-consuming QM through paper-based documentation
Innovation Area

Digital factory twin
Collaborative robotics

Solution Categories

Digital enabled management
(used by e.g. plant manager)

Advanced analytics
(used by e.g. quality engineer)

Digital ways of working
(used by e.g. operator)

Advanced automation
(used by e.g. logistician)

Integrated by an IT/OT architecture

Predictive and condition based maintenance

Condition monitoring

Digital factory twin
Collaborative robotics

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(used by e.g. plant manager)

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(used by e.g. logistician)
Ted Test works at a textile factory

He is responsible for…

- product and process quality.
- the operation and maintenance of the machines.
- the feedback of the quality control from the laboratory into the production.

He's dissatisfied with …

- the dead time between laboratory results and production.
- the different testing and production requirements.
- the complex documentation obligation.
Digital integration of a testing machine

- QR (Quick Response) Code
- RFID (Radio Frequency Identification)

- Integration of the testing machine
- Recording, visualization and feedback of test results in real time
Controlling of testXpert® via app
Realization of digital applications

IT-Infrastructure

Integration of the testing machine

Thingworx (IoT Plattform)

Kepware (Middleware)

Machine 1
- S7
- WAGO
- Int. Sensor
- Ext. Sensor

Machine 2
- S7
- WAGO
- Int. Sensor
- Ext. Sensor

Machine 3
- S7
- WAGO
- Int. Sensor
- Ext. Sensor

Machine ...
- S7
- WAGO
- Int. Sensor
- Ext. Sensor

Data base

Test result

Test spec.
CONDITION MONITORING

Shorter reaction time

Live KPIs
Autonomous alert
Data correlation
Integration of the Zwick testing machine

- Thingworx (IoT Plattform)
- Kepware (Middleware)

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Logo Quellen: www.zwick.de; www.ptc.com
Integration of the Zwick testing machine
DIGITAL PERFORMANCE MANAGEMENT

Empowered problem solving

Real-time KPIs
Advanced analytics
Problem escalation
Central alerts
DIGITAL ASSISTANCE SYSTEMS

Improved remote maintenance

Tailored guidelines for remote maintenance
Machine set up
AUGMENTED REALITY

Improved logistics efficiency

Picking guide
Material identification and selection
AR glasses
ADAPTIVE WORKSTATION

Enhanced ergonomics of the work place

Acquires data related to the operator’s movement
Enhanced ergonomics
Project Examples
Digital sewing factory in Europe – sports industry

Problem: Loss of sales

Development of a digitized factory for:

Aim:
- faster reaction to the market
- satisfaction of customers’ needs
- more flexibility
- increase of turnover

→ Produce several products in 1 sewing line
Project Examples

Predictive maintenance – Jeans manufacturing

Problem: High machine downtimes

Measuring machine wear in real time to:

Aim:

- ...get information when to replace machine components
- ...plan your maintenance more accurate
- ...save costs

→ Expand tool to every machine type (from spinning to finishing) and process at the jeans manufacturer
Projektbeispiele
Condition Monitoring – Bakery

Problem: Extended Lead times and complex products

Concepts of a digital baking line

Aim:
- Shortening of lead times
- Reduction of quality defects with small batch sizes
- Training & qualification of employees

→ Extension of the system to include further processes in the production

Definition of process- and technology

Data analysis

Digitalization of paper-based information and visualization in Dashboard

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Do you already benefit from digitization?
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