CarboScreen

Monitoring Solutions for Carbon Fibres

Revolutionizing the carbon fiber industry through digitalization

Mai 2025

Carbon fibers and composites represent high performance and are key enablers for sustainable mobility and modern industries, but their production is still analog, manual and disconnected from smart manufacturing

Manual monitoring in the production of carbon fibers and composites leads to increased costs, CO_2 emissions, downtime and loss of quality

Up to 10 x	higher **costs** compared to steel parts
More than 10 x	more **CO_2 emissions** compared to steel parts
Up to 6 w/a	**downtime** due to equipment failure and personal injury
Up to 15 %	fluctuations in **mechanical properties**

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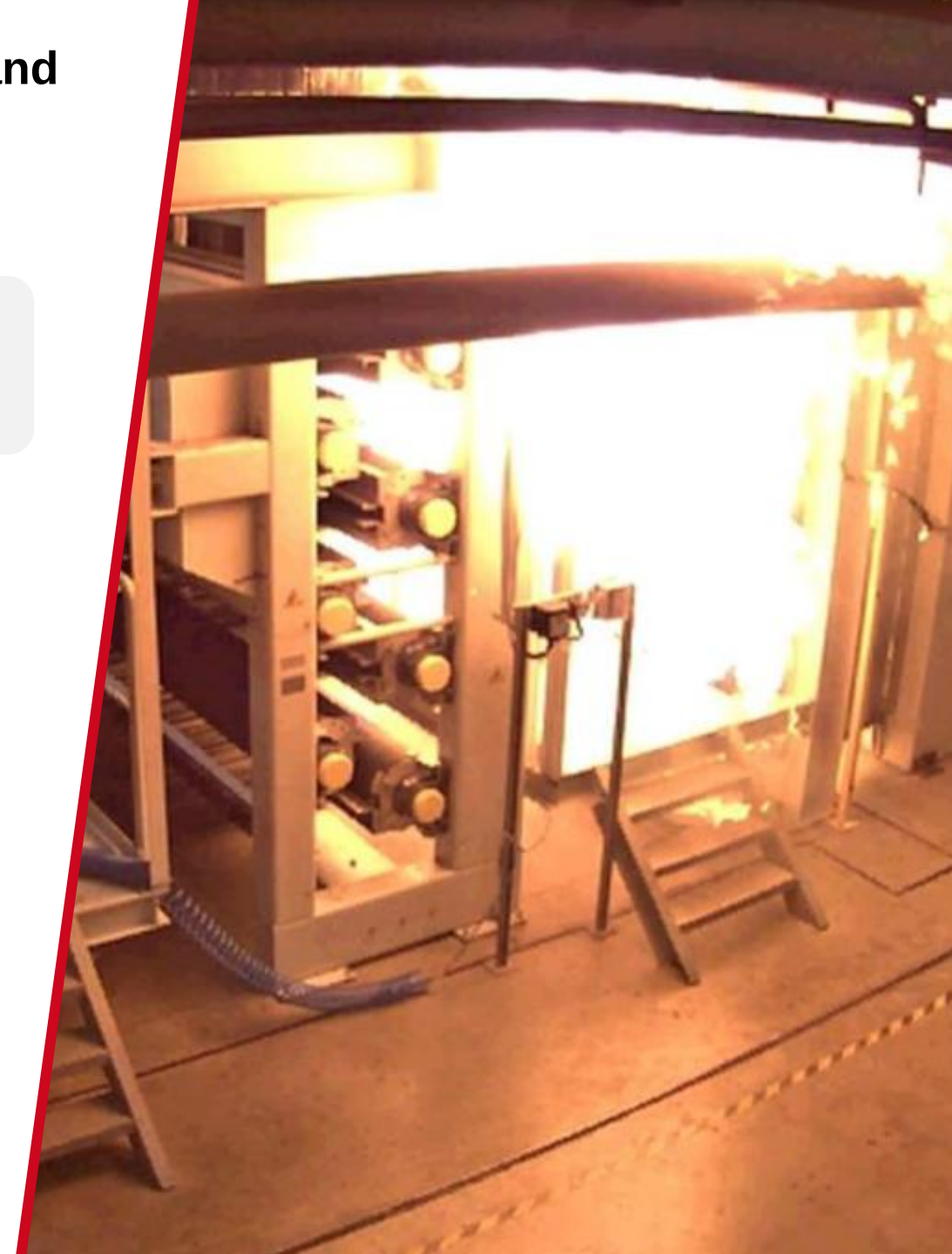


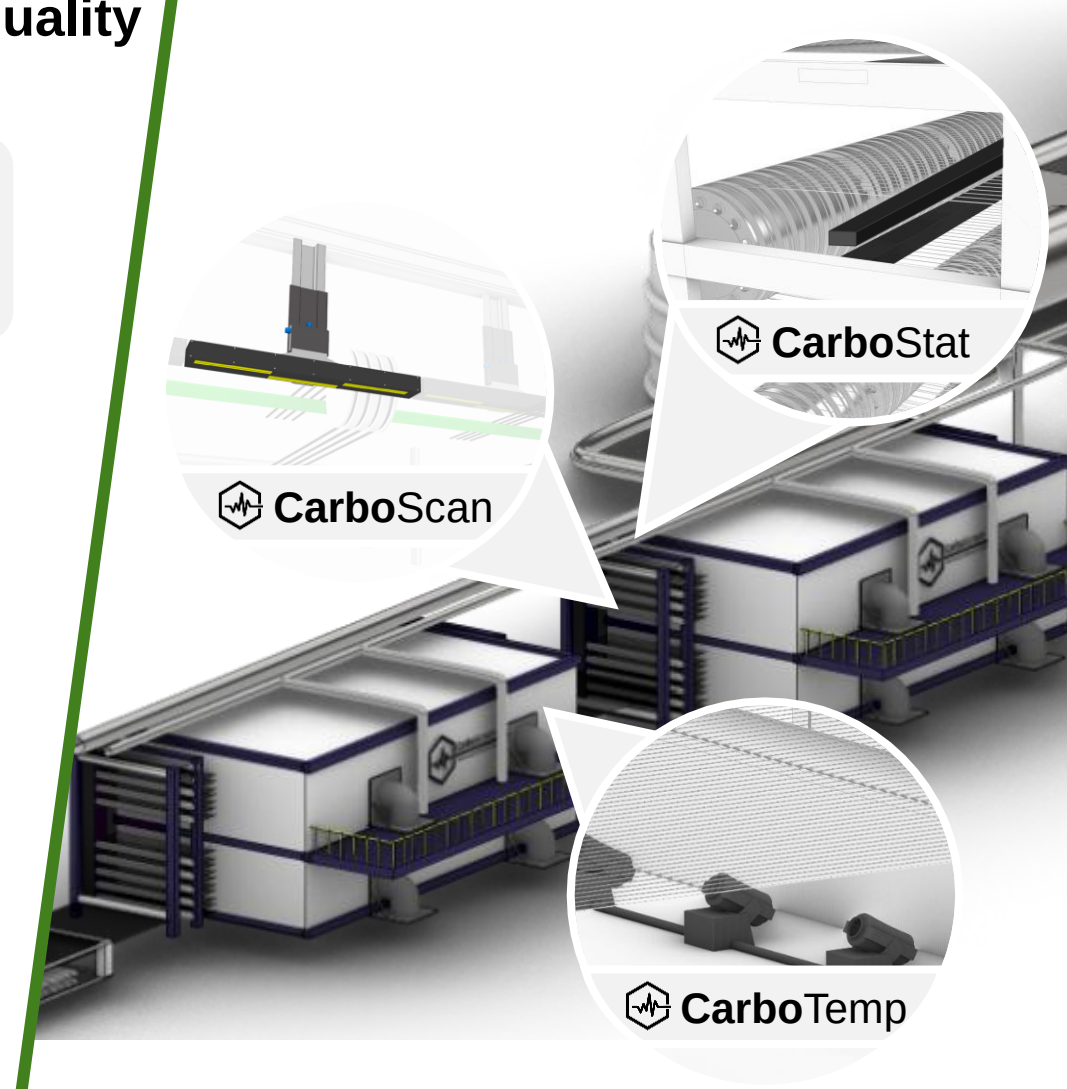
Digital monitoring systems from CarboScreen enable a reduction in costs and CO_2 emissions, an increase in sustainability and an improvement and certification of quality

More than 40 % reduction in **costs***

Up to 37 % less **CO_2 emissions***

Improved process **control** & **certified** quality

Increased **safety** and **process reliability**



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*Use case: Industrial carbon fiber production with a capacity of 1,500 TPY

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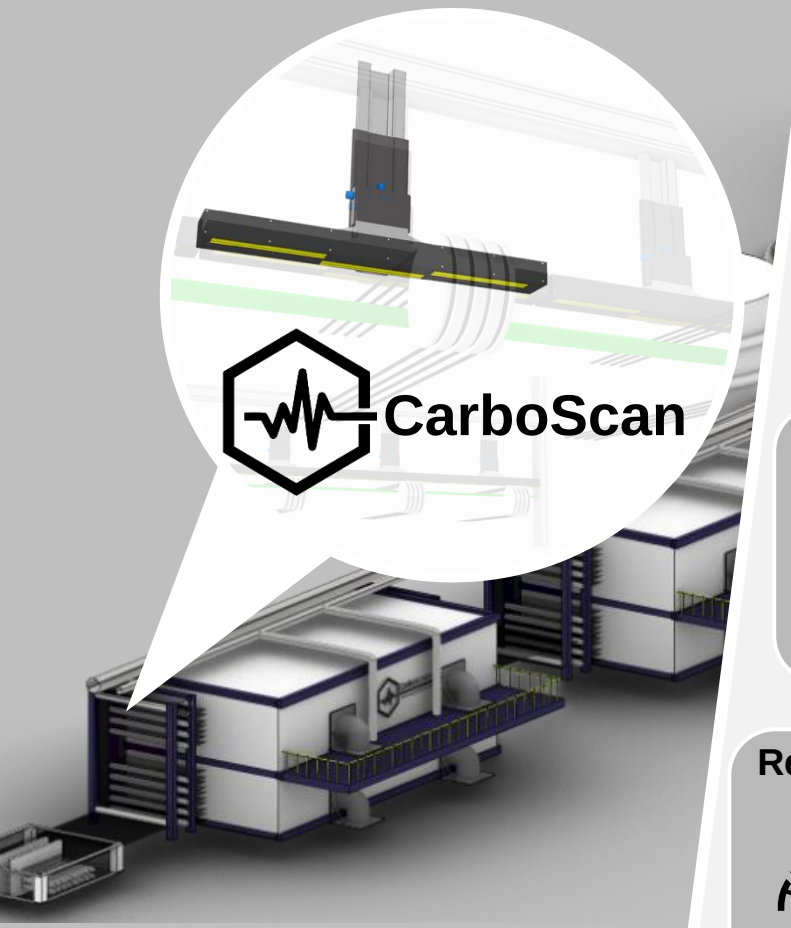
Spin-Off Award
Presented by RWTH

The CarboScan system enables continuous data collection and defect analysis to improve quality and efficiency using an optical sensor and artificial intelligence

Installation of sensor on the production line



AI-based processing of data

Img 1 | Img 2 | ... | Img n

Identification

No defect ⇔ *Anomaly*

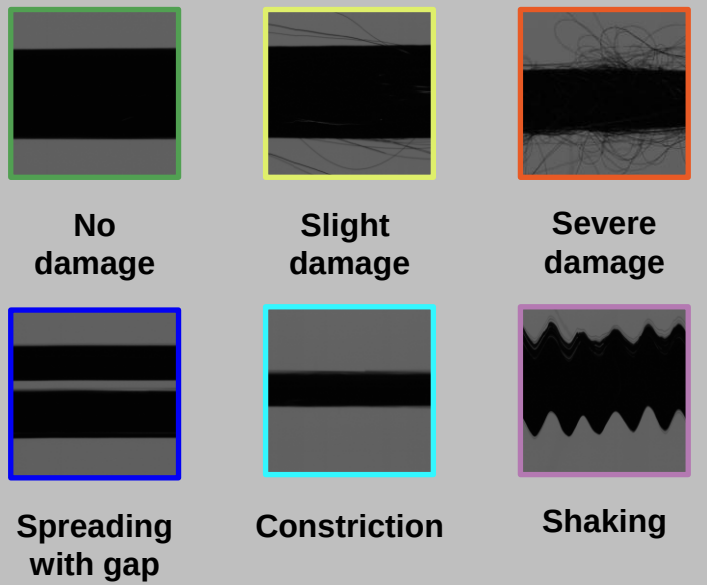
Classification

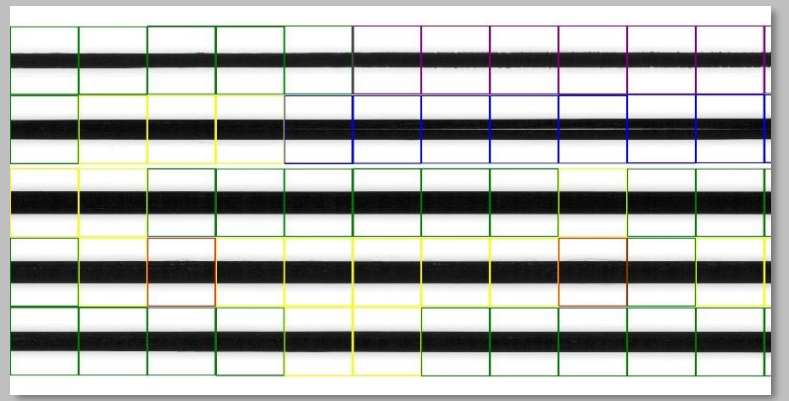
Damage | *Width change* | *Shaking* | *Fuzz-ball*

Regression (Quantification)

Slight ... *Severe* | *-Δx* | *+Δx* | *Amplitude* | *Size*

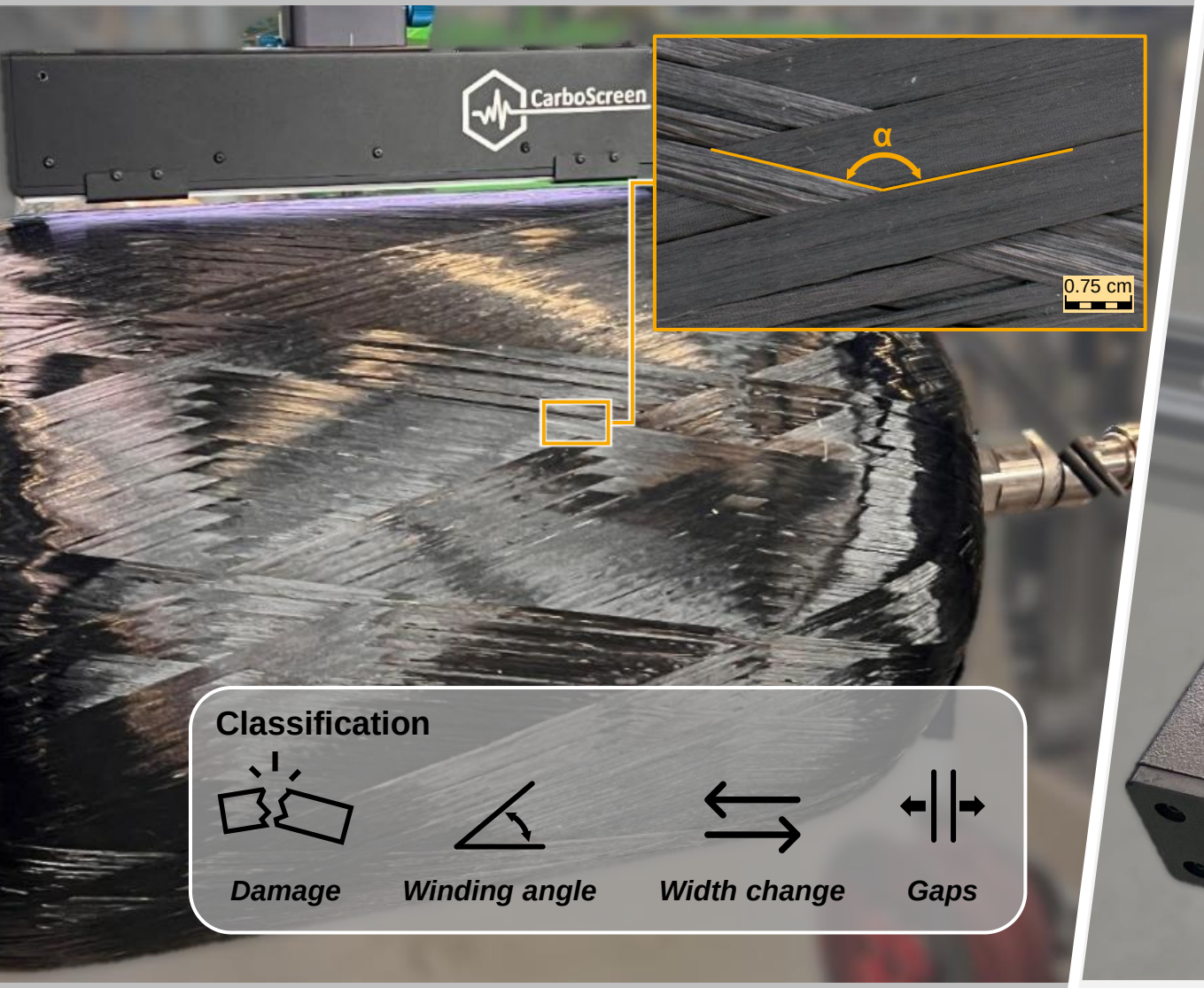
Visualization of results



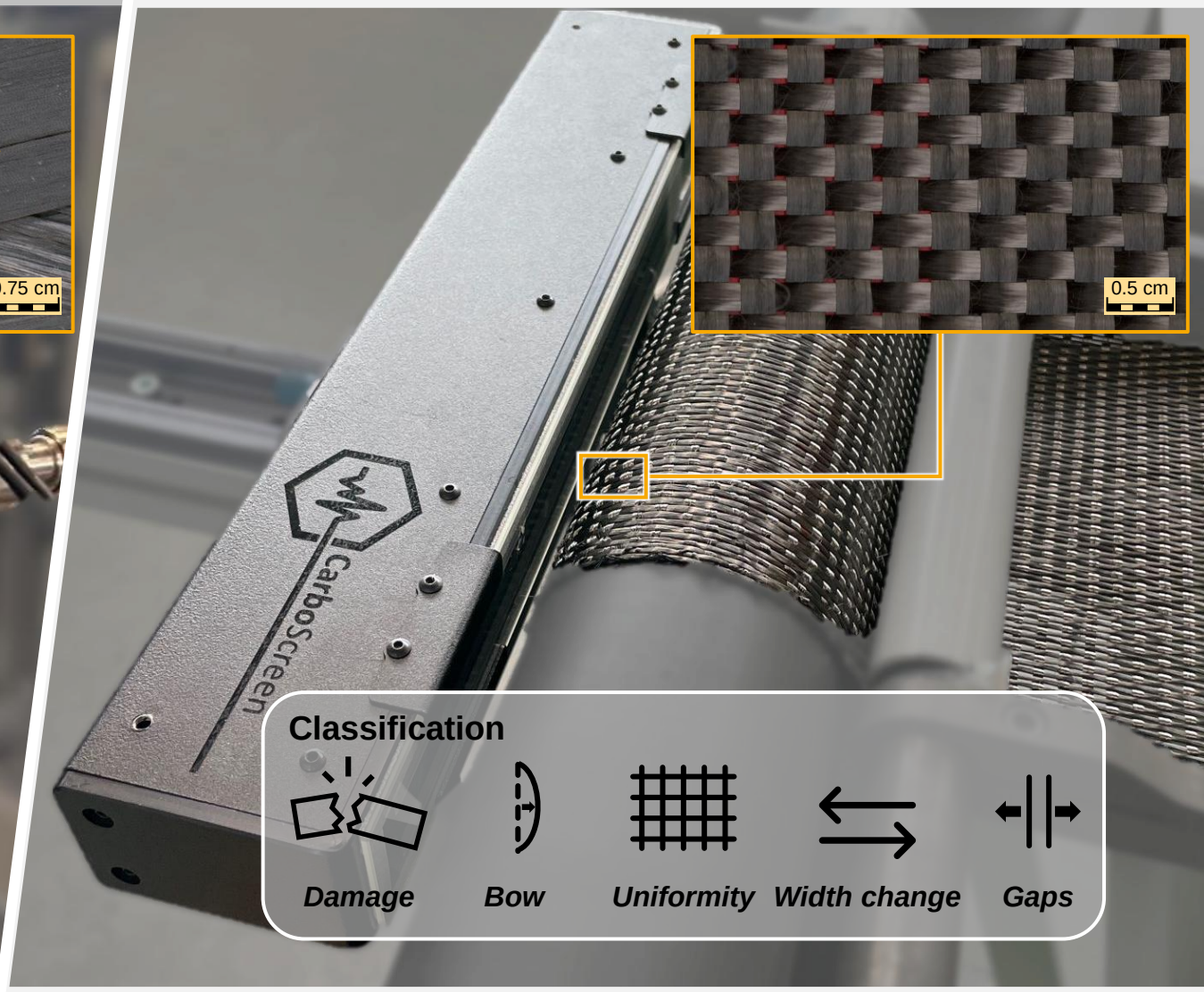


In addition to fiber manufacturing processes, the CarboScan system can also monitor the production of composites

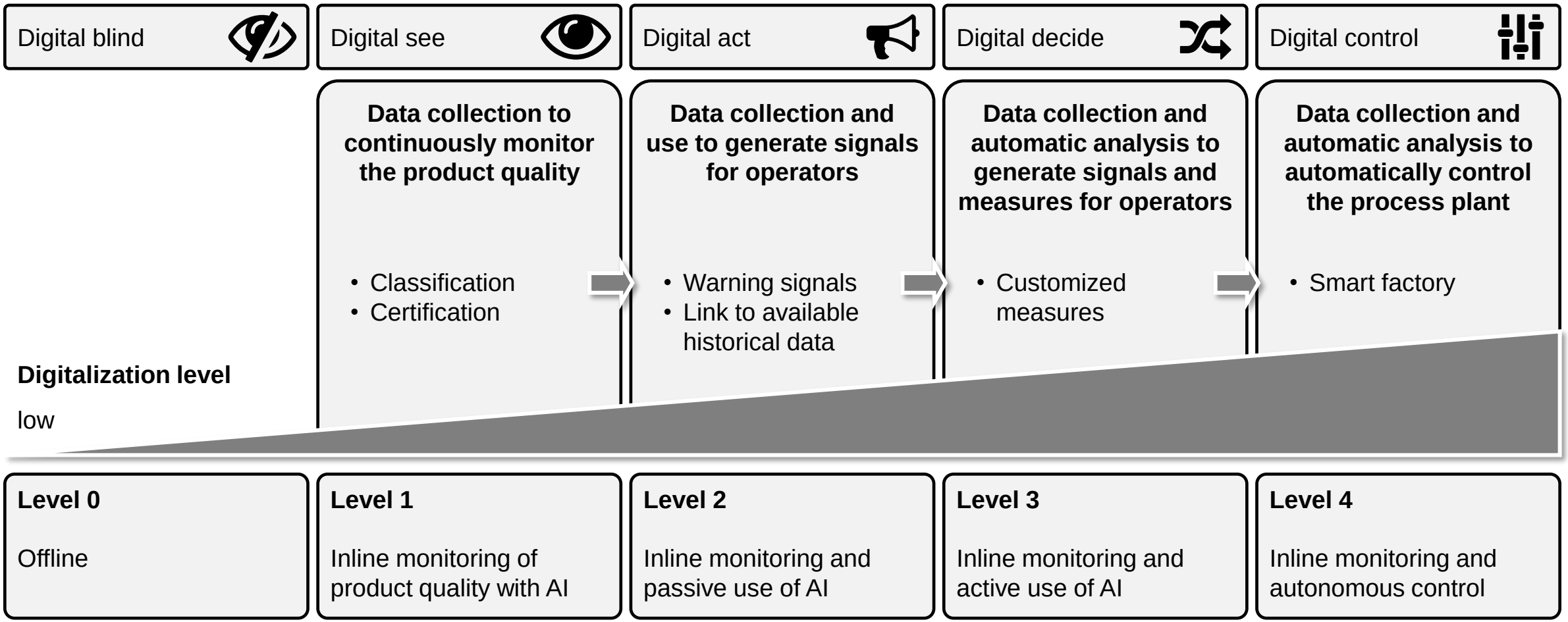
Winding



Weaving



Sensor technology and AI can be used with an increasing digitalization level of the process



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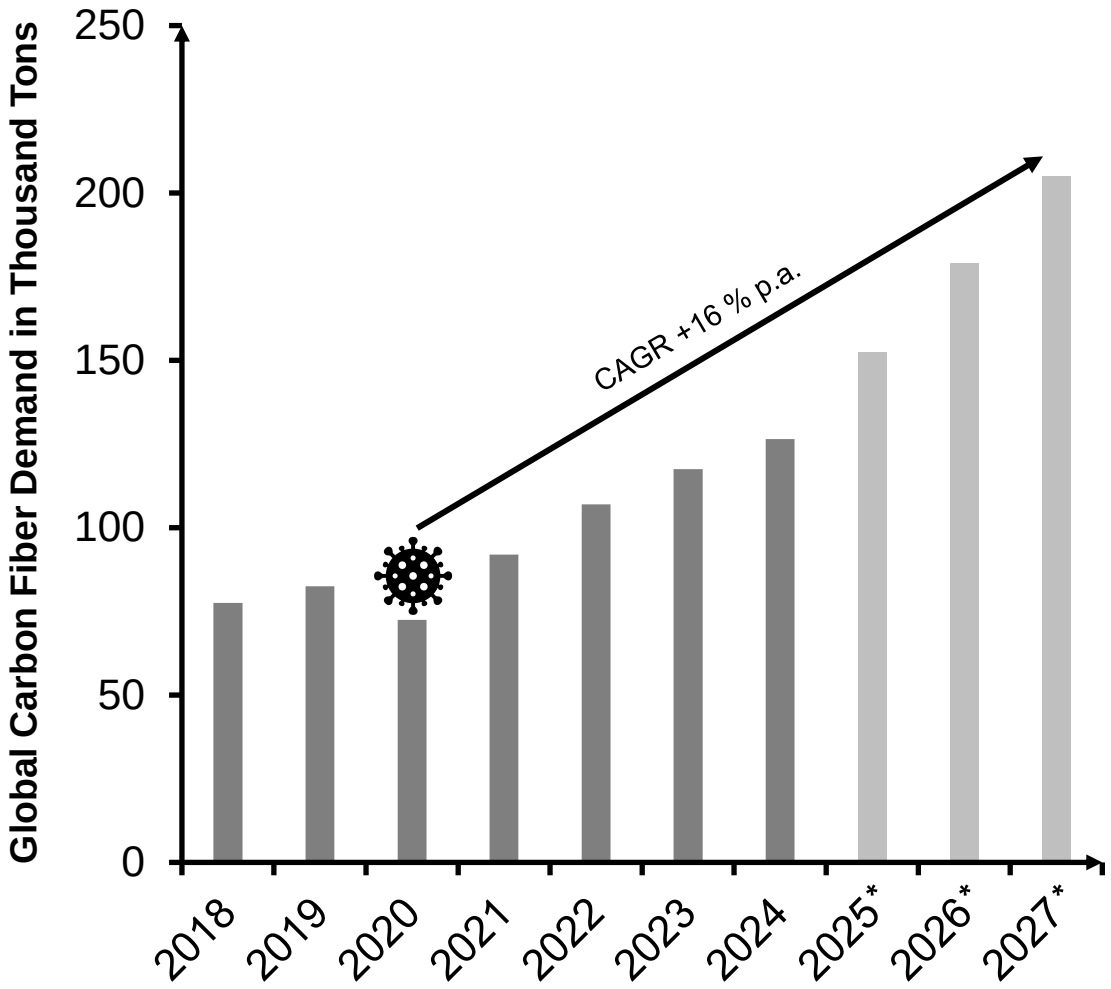
Digitalization improves efficiency and competitiveness and enables the production of carbon fibers to be maintained in Europe



*Forecast

- Global demand for carbon fibers in 2024 was **126.5 kt**[1]
- Future demand for carbon fibers will exceed existing production capacities, resulting in a **shortage of carbon fibers**[2]
- Capacity expansions mainly in **Asia**
- New manufacturers emerging on the market, especially from **China** and **India**
- Increasing **price pressure** from Chinese producers is forcing established manufacturers to reduce their production costs through **innovation**
- Carbon fibers are a **critical raw material** for the supply chains of the **strategic technologies** wind energy, mobility, defense and aerospace

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[1] Saurer, M.: Marktbericht 2024 – Der globale Markt für Carbonfaser und Carbon Composites. Composites United e. V., Berlin, März 2025
[2] Source: Daniel Pichler: Implications of a Carbon Fiber Future: High Growth, Evolution, Maturation, Commoditization. Carbon Fiber Conference, Charleston (US), October 08 - 10, 2024

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CarboScreen offers a unique combination of different sensor systems with expertise in the production of carbon fibers and composites as well as AI-based data processing

Expertise in carbon fiber and composite production

- Process and market experience
- Expertise to increase efficiency
  - Engineering
  - Process development
  - Simulation

Portfolio of different sensor technologies

- Inline monitoring of fiber properties
- Modular design
- Applicable along the entire composites process chain

AI-based data processing

- Database of more than 100,000 images
- Tailor-made for carbon fiber and composites
- Real-time evaluation of inline measurement data
- Continuously updated digital twin of the product

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We offer sensor systems, software licenses as well as data recording and consulting services to increase production efficiency through digitalization

Sensor suppliers

DELTA SYSTEMS

Image Access

optris

Sale and rental of sensor systems

Services for recording product data

CarboScreen
Monitoring Solutions for Carbon Fibres

Software licenses for AI model

Consulting services

Pursued strategic partners

ONEJOON

CARBON FIBER

DIENES

Composite markets

- Aerospace
- Wind energy
- Pressure vessels
- Automotive
- Sports and leisure
- Construction
- High-performance fibers

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CarboScreen is valued by industry experts

EXIST Transfer of Research Program
April 2023 to March 2025
Founding of CarboScreen GmbH

AVK Innovation Award 2023
24 October 2023
Category “Procedures & Processes”
Salzburg, Austria

RWTH Spin-off Award 2024
3 July 2024
Aachen, Germany

Pioneer of lightweight construction 2024
29 January 2025
Germany
https://www.leichtbauwelt.de/

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We are three founders from RWTH Aachen University with a passion for carbon composites, supported by an ambitious and creative team

Felix **Pohlkemper**

CTO
Sensor Development

Dr.-Ing. Musa **Akdere**

CIO
Programming & AI development

Dr.-Ing. Tim **Röding**

CEO
Finance & Marketing

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Let's revolutionize the carbon fiber and composites industry together

What monitoring solution do you need?

We are looking for partners for developing new sensor systems!

CarboScan demonstrator presented at the JEC World 2025

info@carboscreen.com

JEC WORLD 2025 The Leading International Composites Show
March 4-6 PARIS-NORD VILLEPINTE

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